**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

June 09, 2003

Richard A. Smith
Forest Supervisor
Boise National Forest
1249 South Vinnell Way
Boise, Idaho 83709

Mark Madrid
Forest Supervisor
Payette National Forest
800 West Lakeside Avenue
McCall, Idaho 83638

Ruth Monahan
Forest Supervisor
Sawtooth National Forest
2647 Kimberly Road East
Twin Falls, Idaho 83301

RE: Land and Resource Management Plan Revisions for the Boise, Payette, and Sawtooth National Forests - Biological Opinion

Dear Mr. Smith, Mr. Madrid, and Ms. Monahan:

With this letter, NOAA's National Marine Fisheries Service (NOAA Fisheries) is providing you with our Final Biological Opinion (Opinion) and Essential Fish Habitat (EFH) Consultation on your proposed revision of the Land and Resource Management Plans (LRMPs) for the Boise, Payette, and Sawtooth National Forests. The Opinion/Consultation is in response to your March 7, 2003, request for formal consultation under Section 7 of the Endangered Species Act (ESA) and consultation under the Magnuson-Stevens Fishery Conservation and Management Act. You determined that the revised LRMPs are likely to adversely affect ESA-listed Snake River salmon and steelhead species and may adversely affect chinook salmon EFH.

NOAA Fisheries conclusions in this Opinion/Consultation are that the revised LRMPs are not likely to jeopardize the continued existence of ESA-listed salmon and steelhead species, are not likely to destroy or adversely modify designated critical habitat, and may adversely affect EFH. Provided within the Opinion are Reasonable and Prudent Measures (RPMs) designed to minimize incidental take at the Plan-level from actions developed through the LRMPs. NOAA Fisheries discussed and modified draft RPMs with consideration of comments from your staff. Thank you for the substantial efforts of your staff in completing this consultation.

Mr. Ken Troyer (208) 378-5692 and Mr. Bill Lind (208) 378-5697 are the NOAA Fisheries contacts for this letter.

Sincerely,

for Michael R Course

D. Robert Lohn
Regional Administrator

Enclosure

cc: J. Troyer - USFS
B. LeVere - USFS
R. Hayman - USFS
J. Foss - USFWS
A. Beck-Haas - USFWS

# Endangered Species Act Section 7 Consultation Biological Opinion
# and
# Magnuson-Stevens Fishery Conservation and Management Act
# Essential Fish Habitat Consultation

Boise, Payette, and Sawtooth National Forest
Land and Resource Management Plan Revisions
Southwest Idaho Ecogroup
Ada, Adams, Boise, Camas, Custer, Elmore,
Oneida, and Valley Counties, Idaho

Action Agency: U.S. Department of Agriculture, Forest Service
Boise, Payette, and Sawtooth National Forests

Consultation Conducted By: NOAA's National Marine Fisheries Service (NOAA Fisheries),
Northwest Region (NWR)

Date Issued: June 09, 2003

Issued by: for Michael R. Course

D. Robert Lohn
Regional Administrator

Refer to: #/F/NWR/2000/01490

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# I. INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with U.S. Fish and Wildlife Service (FWS) and NOAA's National Marine Fisheries Service (NOAA Fisheries), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This biological opinion (Opinion) is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations found at 50 CFR 402.

The analysis also fulfills the Essential Fish Habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2)).

The USDA Forest Service (Forest Service) proposes to revise the Land and Resource Management Plans (LRMPs) for the Boise, Payette, and Sawtooth National Forests (collectively referred to as LRMP Revisions). The purpose of the LRMP Revisions is to replace the existing LRMPs on the three National Forests (NFs) that encompass the Southwest Idaho Ecogroup [SWIE]). In addition, the Revisions would also replace the interim management strategies of PACFISH (USDA Forest Service and USDI Bureau of Land Management [BLM] 1995), INFISH (USDI FWS 1998a), and the LRMP biological opinions on these strategies (National Marine Fisheries Service [NMFS 1995b]; NMFS 1998). The Forest Service is proposing the action according to its authority under the Forest and Rangeland Renewable Resources Planning Act (1974), as amended by the National Forest Management Act (1976) and its implementing regulations. The administrative record for this consultation is on file at the Idaho Habitat Branch office of NOAA Fisheries.

## A. Background and Consultation History

The proposed Federal action is a plan-level action to revise the LRMPs for the SWIE. Consultation history for LRMPs in the SWIE is both lengthy and complex, preceded by a series of plan-level consultations beginning in 1995. Previous plan-level consultations relevant to the proposed Federal action include:

- Biological Opinion on Implementation of Interim Strategies for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH) (NMFS 1995a);

- Listed Snake River Salmon Biological Opinion; Land and Resource Management Plans for the: Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests (1995 LRMP Opinion) (NMFS 1995b); and,
- PACFISH Extension Letter - October 08, 1996 letter from William Stelle Jr. (NOAA Fisheries) to Jack Ward Thomas (Forest Service) and Michael Dombeck (BLM).
- Biological Opinion - Land and Resource Management Plans for National Forests and Bureau of Land Management Resource Areas in the Upper Columbia River Basin and Snake River Basin Evolutionarily Significant Units (1998 LRMP Opinion) (NMFS 1998).

In the early 1990=s, the Forest Service and BLM recognized that Federal land management had allowed activities to occur which had led to a reduction in fish habitat capability and degraded fish habitat on Federally-managed lands, contributing to the decline of anadromous fish species. In 1995, PACFISH (Forest Service and BLM 1995) was established as interim direction to address this situation, amending existing LRMPs across a geographic area that included National Forest System lands administered by the Boise, Payette, and Sawtooth NFs. PACFISH was intended to be an interim strategy, expected to be in effect for approximately 18 months while long-term ecosystem-scale strategies were developed.

The intent of PACFISH was to protect existing quality anadromous fish habitat and arrest habitat degradation on Federal land, thus allowing restoration of aquatic and riparian ecosystems to occur at natural rates. Further, the action agencies wanted to make every effort to see that their actions would not lead to the extinction or further endangerment of anadromous fish. At a minimum, PACFISH was intended to hold the line on habitat degradation in the short-term until a long-term, ecosystem based restoration strategy could be developed to protect and restore anadromous fish-producing waters on Federal lands in the Columbia River Basin.

In 1995, National Forests across a geographic area that included the SWIE, submitted biological assessments (BAs) for implementation of their LRMPs as amended by PACFISH to address effects on ESA-listed chinook and sockeye salmon. NOAA Fisheries issued a biological opinion (1995 LRMP Opinion [NMFS 1995b]) for these Federal actions and in it noted the lack of a comprehensive, landscape-scale aquatic conservation strategy (ACS) in the actions. In the 1995 LRMP Opinion, NOAA Fisheries recognized that PACFISH represented an improvement over existing planning direction and would foster the beginning of natural habitat restoration. However, because PACFISH was intended to be a short-term strategy and did not contain an active watershed restoration component, it was unlikely that mortality of listed salmon caused by existing degraded habitat conditions would be significantly reduced.

NOAA Fisheries defined an approach in the 1995 LRMP Opinion for addressing the long-term needs of Snake River salmon, including a series of goals, objectives, and guidelines to be applied until the LRMPs were updated, at which time this direction would be addressed through the Interior Columbia Basin Ecosystem Management Project (ICBEMP) and revised LRMPs. The items in the 1995 LRMP Opinion built on components of PACFISH and were supplemental to LRMPs. This guidance was to serve as the basis for conservation of ESA-listed salmon and critical habitat during the National Forests' (and BLMs') development of ICBEMP, a strategy for long-term ecosystem management. This Opinion emphasized the need to develop management strategies that fostered the maintenance and creation of well-distributed, high quality habitat, over time. Compliance by the Forests with the guidance in the 1995 LRMP Opinion was part of the basis for a "no jeopardy/no adverse modification" determination.

The listing of Snake River steelhead as Threatened under the ESA in 1997 required the Forest Service to again initiate ESA-consultation on the LRMPs to address potential effects to steelhead (1998 LRMP Opinion [NMFS 1998]). The 1998 LRMP Opinion stated that adherence to all existing plan-level direction increased assurance of no jeopardy at the project level. Plan-level direction included: nine recommendations originating in the steelhead Biological Assessment (BA) to address PACFISH-amended LRMP deficiencies; the extended time period for implementation of the interim strategy; the 1995 LRMP Opinion; and direction in the original LRMPs. In addition to other important items, the BA and 1998 LRMP Opinion included recommendations to accelerate watershed restoration actions.

The 1998 LRMP Opinion noted that a major weakness in PACFISH-amended LRMPs was the lack of a comprehensive, ACS for watersheds with ESA-listed fish species. It pointed out that, without key elements of a long-term ACS in place under PACFISH, planning of actions to that point had lacked a comprehensive and coordinated approach to analyze and restore watersheds to improve survival and enable recovery of the listed anadromous species. Deficiencies in management direction identified in the 1998 LRMP Opinion were: low levels of restoration; ineffective monitoring; and inconsistent PACFISH implementation. The purpose of the nine recommendations in the 1998 LRMP Opinion BA was to address gaps in existing plan level direction. Five mechanisms were developed in the 1998 LRMP Opinion to assure implementation of the nine recommendations and begin the transition to a longer-term strategy.

The 1998 LRMP Opinion began addressing long-term conservation actions in response to PACFISH being implemented well beyond its interim 18-month period. The recognition again was that PACFISH would be replaced by a long-term, ecosystem based ACS to maintain salmon and steelhead habitat in an ecologically sound framework. The 1998 LRMP Opinion identified components of such a long-term strategy, identifying timelines and an oversight implementation structure.

The conservation standards and outcomes of these past plan-level consultations play an important role in the revised LRMPs. The revised LRMPs do not repeat verbatim direction in PACFISH or the LRMP Opinions, but should demonstrate that management actions on Federal land carried out within the framework of the LRMP Revisions meets or exceeds the intent of this previous

direction since the distribution of ESA-listed salmon and steelhead are not limited to SWIE boundaries. Interagency Regional Executives determined the revised LRMP direction would replace current direction contained in PACFISH and the LRMP Opinions. The Regional Executives also agreed that the long-term ACS developed through the Revision effort would be sufficient to replace the previous interim strategies and consultations (Forest Service et al. 2002a).

Consultation for the LRMP Revision effort has followed the framework for consultation on plan-level proposals, including the development of LRMPs, outlined in the August 30, 2000, National Memorandum of Agreement (MOA) signed by the Forest Service, BLM, NOAA Fisheries, and the FWS (USDA et al. 2000).

For this consultation effort, informal discussions with NOAA Fisheries and FWS were initiated in November 2000 to discuss consultation needs for the Revision effort, as well as to discuss those species that needed to be included in the consultation. By April 2001, NOAA Fisheries, FWS, and the Forest Service had signed a local Memorandum of Understanding (MOU) that established a cooperative process for completion of consultation on the LRMP Revisions (USDA Forest Service et al 2001). The guidance provided in that MOU set in motion the establishment of Level 1 and Level 2 Streamlining Teams and a working structure that linked those teams with the Forest Service Planning and Revision Teams to ensure continued communication and resolution of issues affecting ESA-listed species.

The local MOU expired on December 31, 2001, without renewal. However, agency commitments to the process continued, and involvement of the Level 1 Team increased from bi-monthly meetings to more frequent, weekly meetings. As needed, the Level 2 Team met to address elevated issues and receive updates on the progress of the Level 1 Team. During the time between April 2001 and January 2003, a close and continuous dialogue between the Forest Service, FWS, NOAA Fisheries, and the Level 1 and Level 2 Streamlining Teams occurred through face-to-face meetings, electronic correspondence, and conference call meetings. The documentation of this complex consultation history is lengthy, and contained within the interagency project record located on file at the NOAA Fisheries Idaho State Habitat Branch and Boise NF Supervisors Offices. The early and involved consultation during this Revision process resulted in the cooperative development and incorporation of direction for the conservation of ESA-listed species in the preferred alternative selected for the LRMP Revisions.

The Forest Service provided a complete BA and EFH assessment on the Boise, Payette, and Sawtooth National Forest Land and Resource Management Plan Revisions to NOAA Fisheries on March 07, 2003 and the consultation time clock was initiated at that time.

The SWIE Revised LRMPs would likely affect tribal trust resources. The proposed action may affect the availability of resources and the use of traditional cultural properties, both important to American Indian rights and interests. Because the action is likely to affect tribal trust resources, NOAA Fisheries has contacted the Nez Perce (NOAA Fisheries 2003a), Shoshone-Bannock (NOAA Fisheries 2003b), and Shoshone-Paiute Tribes (NOAA Fisheries, 2003c) pursuant to the

Secretarial Order (June 5, 1997). Discussion with the Tribes revealed that Forest Service coordination during the National Environmental Policy Act (NEPA) process has resulted in the action adequately protecting against potential effects to tribal resources**.** Management direction for tribal rights and interests was developed for the Revised Plans on each Forest. This included standards, guidelines, and objectives for consultation and resource protection, and the following management goals:

1. Facilitate the exercise of tribal rights to meet Federal trust responsibilities; and,
2. Enhance relationships with American Indian tribes in order to understand and incorporate tribal cultural resources, values, needs, interests, and expectations in forest management and allow cooperative activities where there are shared goals.

Management direction for other resource programs, such as vegetation, soils, water, riparian, aquatic, and wildlife, was also incorporated into the proposed action to provide for:

1. Habitat and watershed conditions that contribute to species viability at sustainable and harvestable levels; and,
2. Management direction to address special areas of concern to the Tribes, such as the South Fork Salmon River and Bear Valley Creek.

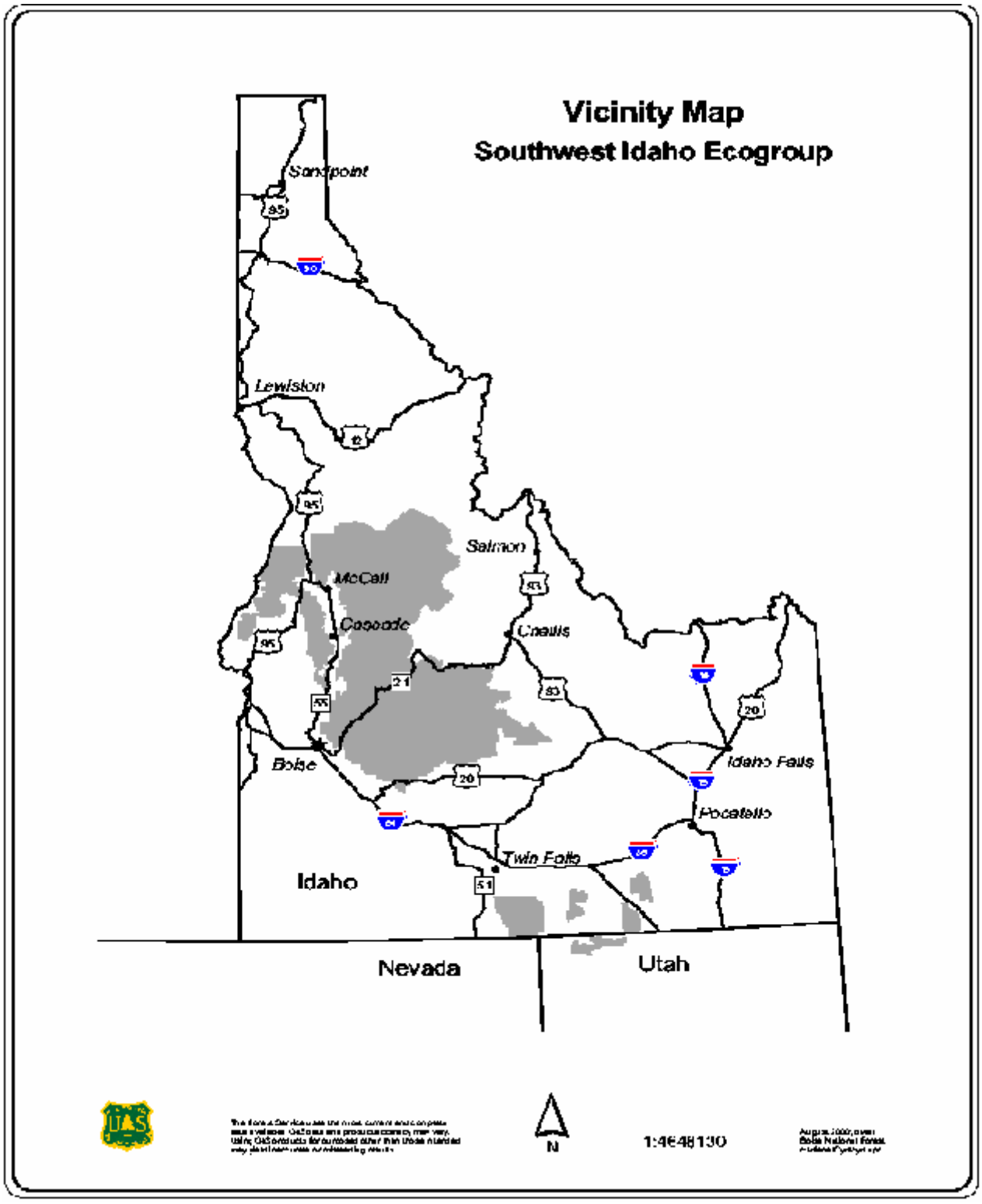
## B. Proposed Action

### 1. Project Area

Proposed actions are defined in NOAA Fisheries' regulations (50 CFR 402.02) as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." Additionally, U.S. Code (16 U.S.C. 1855(b)(2)) further defines a Federal action as "any action authorized, funded, or undertaken or proposed to be authorized, funded, or undertaken by a Federal agency." Because the Forest Service proposes to issue the Revised LRMPs, it must consult under ESA section 7(a)(2) and MSA section 305(b)(2).

The project area for the proposed action includes lands administered by the Boise, Payette, and Sawtooth NFs, collectively known as the SWIE (Figure 1). The Boise NF is approximately 2.2 million acres, including an estimated 65,000 acres in the Frank Church-River of No Return Wilderness (FC-RONR). The Payette NF is approximately 2.3 million acres, an estimated 770,000 acres of which is located in the FC-RONR Wilderness, and an additional 24,000 acres of which is located in the Hells Canyon Wilderness. The Sawtooth NF is approximately 2.1 million acres, 270,000 acres of which make up the Sawtooth Wilderness.

Figure 1. - Project Area/Vicinity Map, Southwest Idaho Ecogroup (SWIE) LRMP Revision



2. Federal Action

As previously described, the proposed Federal Action is the Revision of the three LRMPs for the Boise (Forest Service 2003a), Payette (Forest Service 2003b), and Sawtooth (Forest Service 2003c) NFs, Forests that constitute the SWIE. The Revisions have been designed to meet legal and regulatory requirements, and to address changes, issues, and concerns that have arisen since the LRMPs were originally released for the Sawtooth NF (USDA Forest Service 1987), Payette NF (USDA Forest Service 1988), and the Boise NF (USDA Forest Service 1990).

The Revised LRMPs are intended to guide natural resource management activities on lands administered by the SWIE Forests for the next 10- to 15-years. They describe management goals and practices, resource protection methods, desired resource conditions, and the availability and suitability of lands for resource management. The purpose of the LRMPs is to provide management direction to provide sustainable ecosystems and resilient watersheds that are capable of providing a sustainable flow of beneficial goods and services to the public. The management prescriptions in the LRMPs are designed to realize goals for achieving desired conditions; although future projects planned to implement those prescriptions will be largely dependent on annual budgets. A complete description of the Federal Action can be found by referencing Chapter III of the LRMP BA (USDA Forest Service 2003d).

The Revised LRMPs were designed in support the National Fire Plan (NFP), developed by the Secretaries of Interior and Agriculture following the 2000 wildland fire season. Significant direction has been provided in support of the NFP in the Revised LRMPs, suggesting a large number of fuels reduction projects as the LRMPs are implemented. Our agencies have developed draft project design criteria to expedite consultation for such actions, criteria that will be used as appropriate during LRMP implementation. In addition, NOAA Fisheries has direction to consider both short-term effects of fuels reduction work and potential long-term benefits of those treatments, provided to NOAA Fisheries and FWS in a December 10, 2002 memorandum from the NOAA Assistant Administrator for Fisheries and Director of the Fish and Wildlife Service. This is compatible with and parallels direction contained in the revised LRMPs for considering effects of actions at multiple temporal scales: temporary, short-term, and long-term.

As previously stated, the Revised LRMPs would replace all interim LRMP direction for ESA-listed fish species across the SWIE. Interim strategies that amended the current LRMP direction, PACFISH/INFISH (P/I) and consultation on those strategies (1995 and 1998 LRMP Opinions), would be vacated upon implementation of the proposed Federal Action. Direction that would be retained in the proposed action includes those forest-wide, watershed, or project-level BAs with letters of concurrence or biological opinions. In these situations, the existing consultation records would continue to apply until the expiration date of the consultation records, unless those consultations are reopened through reinitiation provisions or amended (LRMP, Chapter III, Threatened, Endangered, Proposed, or Candidate [TEPC] Standard #2).

During the early-consultation process, the Level 1 Streamlining Team agreed that it would be necessary to adopt a long-term ACS into the Revisions in order to replace interim direction

provided by P/I and the LRMP Opinions. It was also agreed that the long-term ACS would meet both: (1) the local needs for listed species restoration and recovery; and, (2) contribute to and not compromise interim strategies that still govern management at the broader scale (i.e. the rest of the range of P/I).

In order to meet these standards, the agencies determined that the Revisions' ACS had to include and address each of the following key components:

1. Goals to Maintain and Restore Soil, Water, Riparian, and Aquatic (SWRA) Resources;
2. Riparian Management Objectives;
3. Riparian Reserve Network;
4. Activity-specific Standards and Guidelines;
5. Classification of Priority Watersheds;
6. Multi-scale Analysis;
7. Watershed Prioritization/Restoration Approach; and,
8. Monitoring & Adaptive Management

## 3. SWIE Aquatic Conservation Strategy Components

The following section will briefly summarize each of the ACS components, include examples where appropriate, and reference the pertinent section of the LRMP BA (USDA Forest Service 2003d) for a detailed discussion of each.

### *a. ACS #1 - Goals to Maintain and Restore Soil, Water, Riparian, and Aquatic Resources*

Resource goals establish an expectation of the characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. The quality of these aquatic features is intimately tied to the integrity of upland and riparian areas. Goals have been developed for the LRMP Revision with these relationships in mind, encompassing both aquatic and terrestrial processes. See Table 1 for an example of goals established for this purpose, summarized by Matrix pathway (as described in: NMFS 1996). More examples of select resource goals that maintain or restore can be found in Chapter III of the LRMP BA, pp 36-48; or found in their entirety by activity type in Chapter III of the SWIE LRMPs.

**Table 1. Example of LRMP Goals/Objectives to Maintain and Restore SWRA Resources by Matrix Pathway (USDA Forest Service 2003d).**

| Associated Matrix Pathway | Direction Location in LRMPs | LRMP Direction[1] |
|---|---|---|
| Watershed Conditions | SWRA Goal 2 | Provide for stream channel integrity, channel processes, and the sediment regime under which the riparian and aquatic ecosystems evolved. |
| | SWRA Goal 3 | Maintain surface and ground water in streams, lakes, wetlands, and meadows to support healthy riparian and aquatic habitats; the stability and effective function of stream channels; and downstream uses. |
| Water Quality | SWRA Goal 6 | Meet or surpass State water quality standards by planning and designing land management activities that protect water quality. |
| | Range Goal 5 | Manage livestock grazing within riparian areas to accommodate the maintenance or restoration of aquatic and riparian processes and functions. |
| Habitat Access | Roads Objective 10 | Inventory and assess existing classified road crossings in subwatersheds that are occupied or contain critical habitat for TEPC species...Assess crossings to determine if they provide for fish passage, 100-year flow, and bedload and debris transport. Incorporate the results into the biennial updates of the WARS database. |
| | Roads Objective 11 | In the Forests' program of work, prioritize and schedule improvements to existing culverts, bridges, and other stream crossings to accommodate fish passage, 100-year flood flow, and bedload and debris transport. Include accomplishments in the biennial update of the WARS database. |
| Channel Condition & Dynamics | SWRA Goal 2 | Provide for stream channel integrity, channel processes, and the sediment regime under which the riparian and aquatic ecosystems evolved. |
| | SWRA Goal 4 | Restore and maintain flow regimes sufficient to create and sustain soil-hydrologic and water quality conditions, and riparian, aquatic and wetland habitats, and to achieve patterns of sediment, and nutrient and large woody debris routing within their inherent range of capability. |
| Flow/Hydrology | SWRA Goal 3 | Maintain surface and ground water in streams, lakes, wetlands, and meadows to support healthy riparian and aquatic habitats; the stability and effective function of stream channels; and downstream uses. |
| | SWRA Goal 4 | Restore and maintain flow regimes sufficient to create and sustain soil-hydrologic and water quality conditions, and riparian, aquatic and wetland habitats, and to achieve patterns of sediment, and nutrient and large woody debris routing within their inherent range of capability. |

[1] Direction refers to LRMP goals, objectives, standards, or guidelines.

*b. ACS #2 - Riparian Management Objectives*

The Revised LRMPs have established Watershed Condition Indicators (WCIs) to serve as Riparian Management Objectives (RMOs). Landscape-scale WCIs describing good habitat and population characteristics for listed, sensitive, native, or desired non-native fish were developed for use in indicating ecosystem health. Similar to the Matrix of Pathways and Indicators developed by NMFS (1996), suites of WCIs were grouped into diagnostic pathways representing watershed and habitat components important for the successful management of aquatic species, their habitats, and other SWRA resources. Appendix B of the Revised LRMPs (pp. B1-B31) includes a Matrix of Pathways for use in evaluating the potential effects of actions on native and desired non-native fish species, water quality and their habitats (SWIE Matrix).

The WCI values in the SWIE Matrix were primarily taken from the original Matrices developed by NMFS (1996) and the FWS (1998b). The analysis that led to development of default values involved managed and unmanaged watersheds in Oregon, Washington, and Idaho that included both inland native fish and anadromous fish. It was generally expected that the WCIs represented a good starting point to describe the desired condition for fish habitat in the absence of local site-specific data. However, the agencies intended that WCIs would be refined to better reflect conditions that are functionally attainable in a specific watershed or stream reach based on the geoclimatic setting which includes local geology, land and channel form, climate, potential vegetation, historic and recoverable fish habitat. In particular, when a WCI value is identified that is not physically or biologically appropriate, given the inherent characteristics of the watershed being considered, the WCI should be modified. Modification of WCIs would be completed through a variety of methods such as multi-scale analyses, forest-wide monitoring results, and collection and evaluation of watershed and/or stream reach specific data. Written documentation of the method and procedures, quality and source of data, and rationale supporting modifications to WCIs would be included in record documentation for the project or mid-level analysis. In watersheds with ESA-listed fish species, modification of WCIs would be coordinated with NOAA Fisheries and/or FWS through Section 7 consultations. An in-depth description of the means by which WCIs could be modified has been provided in Appendix B of the LRMP Revisions.

The identification of WCIs for stream channel conditions provide the criteria against which attainment or progress toward attainment of multiple goals, objectives, standards and guidelines can be directly, or indirectly, measured. Measurable WCIs provide a benchmark by which changes to landscape conditions through management activities can be measured over time. It is not expected that WCIs would be met instantaneously, but rather that values would be moved toward, or achieved, over time. Achievement of WCIs is expected to result in diverse and complex habitats capable of providing the combination of habitat features important for the life-history requirements of the fish community in the watershed and the de-listing of Clean Water Act (CWA) 303(d) listed waterbodies.

*c. ACS #3 - Riparian Reserve Network*

The riparian reserve network established for the LRMP Revision is a system of Riparian Conservation Areas (RCAs). Management activities that occur within, or have an influence on, RCAs would be subject to specific goals, objectives, standards and guidelines intended to allow the natural processes of RCAs to function appropriately while activities are implemented.

LRMPs and the associated management direction, regulate two major features of an RCA: (1) width; and (2) the kind and amount of activity that can take place within, or influence them (Spence et al. 1996; Quigley and Arbelbide 1997). Defining the width, or outer extent of the RCA, is addressed in this ACS component. RCAs would be classified into one of four categories for the Revision; these categories and their use have been briefly described in Attachment 1 of this Opinion, and described in full detail in Appendix B of the LRMPs (pp. B32-B40).

The proposed approach would allow SWIE Forests to use of a default 300-foot/150-foot RCA width where data is absent, or shift to more of a site-specific analysis[1] that assesses the ability of the RCA to meet riparian functions and processes (based on site-potential tree height, floodprone width, microclimate, sediment delivery, etc.). A similar approach has also been proposed for non-forested rangeland ecosystems, as well as for ponds, lakes, reservoirs, and wetlands.

*d. ACS #4 - Activity-specific Standards and Guidelines*

The Revised LRMPs describe management direction for the SWIE that would guide Forest personnel to achieve desired outcomes or conditions for both land stewardship and public service. This direction is presented at three levels: (1) Forest-wide; (2) Management Area (MA); and, (3) Management Prescription Category (MPC). These three levels of direction are closely interrelated and need to be considered together in order to understand the full scope and intent of Forest management direction.

Forest-wide direction applies across the entire SWIE, providing general direction for all Forest resources and the foundation for more specific direction at the MA level. MA and MPC direction prescribes specific requirements to administrative boundaries or a combination of watersheds to address more localized concerns with resource areas of importance. The MA and MPC direction is designed to tier to the Forest-wide direction, and to help achieve Forest-wide goals and desired conditions. A brief discussion of each type of direction follows.

[1] The option to use site-specific analysis to define RCA requires the most thorough analysis of the three options in that when defining the RCA, the specialist conducts an on-site analysis of the riparian functions and ecological processes associated with the stream, pond, lake, reservoir or wetland, and defines the RCA based on the distance that best encompasses the extent of those functions and processes.

***Forest-wide Direction.*** This section describes management direction that applies generally to National Forest System lands across the entire SWIE. There are five types of direction described for the Forest resource programs in Forest-wide direction: desired conditions, goals, objectives, standards, and guidelines (See Attachment 2 to this Opinion for definitions of each of these types of direction.

*Timeframes* - LRMP objectives were generally designed to be achieved within the 10- to 15-year planning period unless otherwise stated. Similarly, standards and guidelines are expected to apply for the planning period, although there may be deviations, as explained in the definitions in Attachment 2. Desired conditions and goals are more timeless in nature. For certain resources, the desired conditions may already exist, in which case both the short- and long-term goal may be to maintain those conditions over time. In other cases, there may be short-term impediments to achieving desired conditions, but the long-term goal is to move resources toward those conditions.

In the direction that follows, there are references to temporary, short-term, or long-term effects. These time periods were also used in the LRMP Revision FEIS, and were consistently defined for modeling purposes so that effects could be analyzed on an equal basis across alternatives. The definitions used in the FEIS were: temporary: 0- to 3-years; short-term: 3- to 15-years; and, long-term: > 15 years. The Revised LRMPs used these temporal definitions as starting points but recognized that they would vary depending on species, life cycles, mobility, ecological processes, and other influences. The recognition was made that these different temporal relationships would need to be determined and analyzed at the project level where site-specific circumstances would be taken into account. Similarly, the Revised LRMPs recognized that all effects are not the same just because they may occur within the same temporary, short-term, or long-term time period. The duration or repetition of an effect within that time period can vary greatly, as can the intensity, location, or type of effect. Again, Forest personnel would evaluate these differences during project-scale analysis.

*Limited Authority* - As a Federal land management agency, the Forest Service has limited authority to influence certain activities or uses on its administered lands (e.g., mining or hydropower development). However, the agency does have authority to require reasonable terms, conditions, or measures to minimize or mitigate the effects of some of these activities or uses. In Forest-wide management direction, these activities or uses were typically addressed by guidelines rather than standards, to reflect the Forests' limited authority. In such cases, the Forests remain committed to minimizing or mitigating effects from these activities, where they cannot be avoided or eliminated.

*Organization* - The Forest-wide desired condition, goals, objectives, standards, and guidelines are organized by resource program area or categories. Direction has been provided for each of the following resource program areas/categories:

- TEPC Species
- Air Quality & Smoke Management
- SWRA Resources
- Wildlife Resources
- Vegetation
- Botanical Resources
- Non-native Plants
- Fire Management
- Timberland Resources
- Rangeland Resources
- Mineral & Geology Resources
- Lands & Special Uses
- Facilities & Roads
- Recreation Resources
- Scenic Environment
- Heritage Program
- Tribal Rights & Interests
- Wilderness
- Recommended Wilderness and Inventoried Roadless Areas
- Wild & Scenic Rivers
- Research Natural Areas
- Social & Economic

These resource areas/categories, in turn, are organized by ecological groupings, beginning with biophysical resources, and then moving to socio-economic resources. Although Forest-wide management direction is presented by individual resource area for efficient reference and retrieval, this direction has been integrated across resource areas.

*Laws, Regulations, and Policies* - Also applied Forest-wide, numerous Federal and state laws, regulations, and policies govern the use and management of resources on NF administered lands. Some of the more important ones are described in Appendix H of the LRMPs, *Legal and Administrative Framework for Forest Planning and Resource Management*. Direction in the LRMPs has been designed to guide Forests resource management in such a way that the laws, regulations, and policies should be met. Wherever the laws, regulations, or policies have more stringent requirements than LRMP direction, the Forests must and will comply with those requirements.

Existing administrative policy, procedure, and guidance to Forest Service employees issued through the Forest Service Directive System are not typically duplicated in the LRMPs. These directives (i.e., Forest Service Manual and Handbooks) that provide further guidance to a resource area are referenced at the beginning of each LRMP resource section.

The Forest Service Manual and Handbook System codifies the agency's policy, practice, and procedure affecting more than one unit and the delegations of continuing authority and assignment of continuing responsibilities; serves as the primary administrative basis for the internal management and control of all programs; and is the primary source of administrative direction to Forest Service employees.

**(a)** **Forest Service Manual (FSM)** - The component of the agency Directive System that contains legal authorities, management objectives, policies, responsibilities, instructions, and guidance needed on a continuing basis by Forest Service line-officers and primary staff in more than one unit to plan and execute assigned programs and activities (FSM 1111).

**(b)** **Forest Service Handbooks (FSH)** - The component of the agency Directive System that provides detailed procedures, instructions, and guidance needed on a continuing basis by employees in more than one unit on how to proceed with a specialized aspect of a program or activity. Handbooks either

implement direction as required by the Manual or incorporate external directives (FSM 1110.3, 1112).

**(c)** **Interim Directive** - An internal directive issuance that modifies previous manual or handbook direction or establishes new direction for a period of up to 18 months. FSM 1113.3 describes the criteria related to issuance and policy on the duration of interim directives, including re-issuance.

When a FSM, FSH, or related interim directive is issued, its force and effect do not depend upon the component of the Directive System to which the directive is issued; rather, it is the use of the helping verbs "must," "shall," "ought," "should," or "may," or the use of the imperative mood (where "you" is understood) that determines the force and effect of the direction. These words have the same force and effect whether they are used in a FSM, FSH or interim directive. FSM 1110.8 provides guidance on the degree of compliance and restriction imposed by helping verbs and imperative mood.

While directives may refer to procedures or requirements imposed on those outside the agency, Forest Service employees do not use internal directives to assign responsibility to or mandate requirements on employees of local, state, or other Federal agencies or on the public. Instead, Forest Service officials use correspondence, agreements, contracts, authorizations, regulations, or other appropriate instruments where necessary to impose requirements on other agencies or on persons not employed by the Forest Service.

*Landslide and Landslide-prone* - Since landslide and landslide-prone areas are not always riparian areas by definition, the Forest Service did not feel that they should be included in the RCA designation (as under P/I) and instead were addressed through Forest-wide direction. The Revision proposes to use a step-down implementation process of categorizing landslide-prone areas described in an implementation guide found in Appendix B of the LRMPs. A coarse-filter modeling effort would be followed by a fine-filter field sub-sampling to better predict the location and extent of landslide-prone areas.

Coarse-filter coverages of landslide-prone areas have been developed for the entire SWIE using the SINMAP model (Pack et al. 1997) and a large database of actual landslides to assist in calibration of the model. The SINMAP model has accurately delineated the pattern of landsliding in British Columbia. The SWIE was mapped into one of four slope stability hazard ratings: stable, low, moderate, or high risk landslide-prone. This coarse-filter programmatic landslide-prone hazard coverage would then be used qualitatively to make relative comparisons between areas, and to identify those that should be targeted for additional fine-filter verification associated with proposed management actions.

The following Forest-wide management direction based on the coarse and fine filters would be applied Forest-wide at the project-level:

*SWRA Standard 12* - Site-specific analysis or field verification of broad-scale landslide-prone models shall be conducted in representative areas that are identified as landslide prone during site/project-scale analysis involving proposed management actions that may alter soil-hydrologic processes. Based on the analysis findings, design management actions to avoid the potential for triggering landslides. Refer

to the *Implementation Guide for Management on Landslide and Landslide Prone Areas"* located in Appendix B to help determine compliance with this standard.

*SWRA Guideline 3* - Where proposed management actions may alter soil-hydrologic processes, representative sample of landslides and landslide-prone areas should be field-verified to identify and interpret controlling and contributing factors of slope stability. Integrate the resulting information with supporting data to provide a final stability assessment and identification of appropriate land management actions in landslide and landslide-prone areas. Refer to the *Implementation Guide for Management on Landslide and Landslide Prone Areas*, located in Appendix B.

*SWRA Guideline 4* - General Field Verification Procedures for Landslide and Landslide-Prone Areas: Six major groups of known characteristics should be investigated to supply information adequate to characterize unstable conditions. These are: (1) Landform; (2) Overburden; (3) Geological Processes on the Hillslope; (4) Bedrock Lithology and Structure; (5) Hydrology; and, (6) Vegetation. Refer to the *Implementation Guide for Management on Landslide and Landslide Prone Areas*, located in Appendix B.

After field verification occurs, the appropriate management restrictions would be applied to the project area to avoid and prevent landslides, including consideration of but not limited to:

*Standard Practices* (In Stable and Low Hazard Areas) - No special restrictions on management actions are needed as long as the actions are in compliance with other Forest-wide or management area direction.

*Limited Practices* (In Moderate Hazard Areas with Low to Moderate Relative Risk) - Management actions are designed with review and guidance of appropriate resource specialists. Limited practices may include but are not limited to: reducing yield or basal area removal of forested vegetation, increased rotation lengths, selective harvest with full suspension yarding, relocating existing or proposed road alignment, improving road drainage design, etc.

*Restricted Practices* (In High Hazard or Moderate Hazard Areas with High Relative Risks) – Management actions are severely restricted or eliminated so as to minimize initiation of landslides and effects to other resources.

See the *Implementation Guide for Identifying and Managing Landslide and Landslide-Prone Areas* in Appendix B of the LRMPs for a complete discussion of how landslides and landslide-prone areas would be addressed by the proposed action.

***Management Area Direction.*** MA direction is designed to tier to Forest-wide direction, and to meet Forest-wide goals and desired conditions. However, MA direction is intended to be more specific than Forest-wide direction, addressing specific concerns related to each program area, and setting the stage for specific actions that can be implemented to resolve those concerns.
MAs use the same types of direction (goals, objectives, standards, and guidelines) that are

defined above for Forest-wide direction. The application of this direction is somewhat different when applied at the MA level. Much of the MA direction is expressed as objectives to be implemented at this level in order to achieve Forest-wide goals and desired conditions.

Timeframes for achieving MA objectives are essentially the same as for Forest-wide objectives, 10- to 15-years (the planning period) unless otherwise stated. More specific timeframes are not typically used because accomplishment can be delayed by funding, litigation, environmental changes, and other influences beyond the Forests' control.

Standards and guidelines are included in MAs to address two areas that Forest-wide direction cannot address specifically. First, they provide more explicit protection or guidance than Forest-wide direction, based on the site-specific needs or concerns of the MA. In other words, Forest-wide standards and guidelines generally apply to all MAs on the Forest; however, this direction may be refined or expanded at the MA level to address specific concerns unique to that MA. The second type of direction relates to MPCs found within the MA. MPC designation carries with it varying degrees of constraints on the types and intensity of management practices that can be used to maintain or restore conditions that best align with the emphasis of that MPC. These constraints result from a common set of standards and guidelines that apply, regardless of the MA in which the MPC is applied. Application of this common set of MPC standards and guidelines helps ensure that management emphasis for the MPC is generally attained, regardless of location. Refer to the more detailed discussion of MPCs below.

***Management Prescription Category Direction.*** Management prescriptions are defined as, "management practices and intensity selected and scheduled for application on a specific area to attain multiple use and other goals and objectives" (36 CFR 219.3). MPCs are broad categories of management prescriptions that indicate the general management emphasis prescribed for a given area. They are based on Forest Service definitions developed at the national level, and represent management emphasis themes, ranging from Wilderness (1.0) to Concentrated Development (8.0). The national MPCs have been customized during LRMP revision to better fit the needs and issues of the SWIE.

MPCs were assigned by subwatershed ($6^{th}$ field HUC) where possible. Although they are intended to show general management emphasis within a subwatershed, they do not necessarily define emphasis for every single acre within that subwatershed. As with most rule sets, there are exceptions within MPCs. For example, some administrative areas (e.g. Wilderness, Wild and Scenic River corridors, Research Natural Areas, etc.) cut across subwatershed boundaries, areas managed according to the laws or policies governing their establishment. Also, there are many small administrative sites that may have different management requirements than the overall MPC emphasis for the subwatershed (e.g., administrative and recreation sites, mining sites, plantations, special use areas, RCAs, and cultural or historic sites).

MPC management emphasis is further defined by Forest-wide and MA direction. For instance, almost all MPCs could feature vegetation management to some degree. The type and intensity of

vegetation management that may occur in a given MPC area is reflected in its common set of standards and guidelines, and may be further refined within an individual area to reflect that unique MA needs or concerns.

Emphasis for each MPC has been described in the Management Area Description and Direction section of the individual LRMPs (Chapter III). Following the emphasis description, the standards and guidelines concerning management practices and intensity that apply to each MPC have been stated. These MPC standards and guidelines have also been incorporated within direction found in each MA under the program area in which it would fall. For example, the road-related standards and guidelines stated under the 4.1a MPC shown below in Table 2 are duplicated in each MA in which the 4.1a MPC occurs under the "Facilities and Roads" MA direction.

**Table 2. Common Standards and Guidelines for MPC 4.1a* Undeveloped Recreation: Maintain Inventoried Roadless Areas .**

| Direction Type | Direction |
|---|---|
| Standard | Management actions allowed in MPC 4.1a (including wildland fire use, prescribed fire, and special use authorizations) must be designed and implemented in a manner that does not adversely compromise the area's roadless and undeveloped character in the temporary, short term, and long term. "Adversely compromise" means an action that results in the reduction of roadless or undeveloped acres within any specific IRA. Exceptions to this standard are actions related to the 4.1a Roads standard and Fire guideline, below. |
| Standard | Road construction and reconstruction may only occur where needed: (1) To provide access related to reserved or outstanding rights, or (2) To respond to statute or treaty. |
| Guideline | The full range of fire suppression strategies may be used to suppress wildfires. Emphasize tactics that minimize impacts of suppression activities on the roadless or undeveloped character of the area. |

*This prescription applies to lands where dispersed and undeveloped recreation uses are the primary emphasis. Providing dispersed recreation opportunities in an inventoried roadless area is the primary objective. Both motorized and non-motorized recreation opportunities may be provided. Other resource uses are allowed to the extent that they do not compromise the roadless and undeveloped character of the IRA. The area has a predominantly natural-appearing environment, with slight evidence of the sights and sounds of people. Species habitat and recreational uses are generally compatible, although recreation uses may be adjusted to TEPC species.

### *e. ACS #5 - Classification of Priority Watersheds*

*Note: The results of ACS Component 5 are a result of the multi-scale Proper Functioning Condition (PFC) assessment in ACS component 6 and its fine-tuning in ACS Component 7. Therefore, to get a complete understanding of the final classification of priority watersheds under this component, it may first be necessary to review ACS Components 6 and 7.*

The LRMP Revision establishes a network of priority subwatersheds for contribution to the recovery of ESA-listed fish species and restoration of their habitat. This network builds on actions already taking place to recover listed fish species, and has been designed to complement existing and interim recovery plans. To achieve this, the SWIE Forests incorporated direction, guidance, and principles identified in recent research and documents, including but not limited to:

1. Restoration concepts of ICBEMP Science Assessment, Vol. III, pp 1354 to 1373 (Quigley and Arbelbide 1997);
2. 1995 and 1998 LRMP Opinions (NMFS 1995b; NMFS 1998; and USDI FWS 1998a);
3. Final Basin-wide "All-H Paper" Salmon Recovery Strategy (Federal Caucus 2000);
4. FWS Draft Bull Trout Recovery Plan (USDI FWS 2002);
5. An Interim Watershed Restoration Strategy (IIT Restoration Task Team 2000);
6. Land Management Recommendations Related to the Value of Low Road Density Areas In the Conservation of Listed Salmon, Steelhead, and Bull Trout (IIT Road Density Analysis Task Team 2002); and,
7. Incorporating Aquatic Ecology into Decisions on Prioritization of Road Decommissioning (Rieman et al. 2001)

The identification of priority subwatersheds was based on key concepts, in relative priority as follows:

1. Secure existing habitats (subwatersheds) that support the strongest fish populations, and that have the highest native species diversity and aquatic integrity.
2. Address and fix/minimize threats to the long-term stability of high-quality habitats/subwatersheds.
3. Extend favorable habitat conditions into adjacent watersheds.
4. Extend good habitat/healthy watershed conditions into more poorly represented parts of the subbasin with less favorable habitat conditions.
5. Focus work on a "limited" number of areas/subwatersheds to increase the chance of meaningful change.

In general, each of these strategies were based on similar concepts, identified the same combination of factors/processes as concerns, and proposed mitigation that included essentially the same suite of planning and protective measures. However, what was uniformly lacking in these strategies was a specific step-down process to identify priority subwatersheds, type of restoration needed, and subwatershed restoration prioritization. The Forest Service approach to ACS Components #5 and #7 combined to address these needs.

***Preliminary Prioritization Process*.** The LRMP Revision Team identified priority subwatersheds in a consistent manner across all subwatersheds in the SWIE. This process

established a ranking of high, moderate, and low priorities for each subwatershed over a network of well-connected, high-quality habitats that support a diverse assemblage of native fish species, the full expression of potential life histories and dispersal mechanisms, and the genetic diversity necessary for long-term persistence and adaptation in a variable environment. The concept of priority watersheds was used to identify areas that represented critical components of the mosaic that needed to be conserved in the short-term. In many cases, however, focus on a fixed set of high-quality watersheds will not meet the goals for healthy, functional aquatic ecosystems because they are too few and poorly distributed, and because natural succession and disturbance processes may preempt long-term productivity in fixed sites. Subwatershed restoration and the development of more ecologically compatible land-use policies would be required to ensure the long-term conservation of listed fish species, both temporally and spatially.

Two key reasons for designating high priority subwatersheds were: (1) recognition that these areas need specific management due to their aquatic and watershed values, and (2) assurance that the areas receive appropriate prioritization for restoration. Subwatersheds in good condition (high geomorphic, water quality, and aquatic integrity ratings) would serve as anchors for the potential recovery of depressed stocks, and also would provide colonists for adjacent areas where habitat has been degraded by anthropogenic or natural disturbance. Those areas of lower quality habitat with high potential for restoration would become future sources of good habitat with the implementation of a comprehensive restoration program. High priority subwatersheds would have the highest priority for restoration, monitoring, and future multi-scale analyses.

The Watershed and Aquatic Recovery Strategy (WARS) identified subwatersheds with high aquatic integrity (strong populations of listed fish species and native cutthroat trout), high geomorphic integrity, and high water quality integrity (see ACS Component #7). These subwatersheds received the highest priority for restoration, specifically a conservation strategy that maintains and protects their high quality with minimal short-term risk from other management actions.

The next priority for restoration were subwatersheds that historically connected local fish populations, that had depressed or were absent of listed fish populations, and that had relatively good geomorphic and water quality integrities. Restoration of these high priority subwatersheds should contribute to the survival and viability of fish populations at risk by providing genetic connectivity between metapopulations and passages for recruitment and recolonization when local stochastic events seriously reduce or remove a segment of the population. Populations at risk include resident fish metapopulations, local anadromous fish populations, and resident fish within the subwatersheds. Management direction applied to these subwatersheds was intended to work toward minimizing short- and long-term risks from management actions, while providing management emphasis compatible with the appropriate type of restoration needed to assist in the long-term recovery of the listed fish species and associated water quality.

Moderate priorities for restoration included subwatersheds that had limited occupancy by listed fish species (or in some cases, none at all), and that had reduced geomorphic and water quality integrities. These subwatersheds would require more effort and time to restore than those

assigned as high priority. Management direction and emphasis provided in these subwatersheds was designed to generally promote the type of restoration needed to make these areas more attractive to listed fish species. The moderate priority subwatersheds are considered important to the overall restoration strategy due to their potential as conduits between local populations, or as colonization areas for local populations and metapopulations. Management direction developed for these areas considered these potential beneficial functions.

***Prioritization Refinement.*** With the resulting number of high priority subwatersheds, it was determined that WARS had to be adjusted to further prioritize these subwatersheds and arrive at a better blueprint as to what the highest priorities for restoration or conservation would be during this planning period (next 10 to 15 years). This was accomplished by a further stratification based on the number of beneficial uses and concerns associated with each subwatershed (17 possible beneficial use counts, refer to ACS #7). For prioritization purposes, these uses and concerns were additive. The larger the number of uses and concerns within a subwatershed, the higher the restoration priority.

At a work session in 2002, the LRMP Revision Team presented this approach to several research fish biologists and hydrologists (Bruce Rieman, Kerry Overton, Charlie Luce, Jack King, and Jason Dunham) from the Forest Service Rocky Mountain Research Laboratory, Boise Laboratory. Feedback suggested that the prioritization procedure resulted in a somewhat biased ranking favoring anadromous fish subbasins and subwatersheds versus those with only bull trout and other native fish species. They also noted that, each core area or subpopulation area (equates to a subbasin) is important to sustain/recover populations, especially from the perspective of conservation biology and genetics. Therefore, they recommended that each subbasin should have its own restoration/conservation "recovery blueprint" mapped out on a subwatershed basis. This would include a "blue print" or a "focused" set of subwatersheds for each subbasin that would incorporate recovery principles and map the short- and long-term restoration/conservation needs to aid in the recovery of the associated listed and resident fish species.

***Identification of the ACS Priority Subwatersheds.*** The research scientist recommendations led to the identification of the "ACS Priority Subwatersheds" for each subbasin (See WARS map, BA Map III-2). These subwatersheds represent the "highest of the high" in terms of applying management direction and restoration prioritization, especially for short-term recovery objectives. This process is not intended to suggest that other subwatersheds with listed fish species are not important, but is rather designed to focus management direction and restoration prioritization for the recovery of listed fish species, their habitats and other SWRA resources. These short-term ACS priority subwatersheds, plus the other high and moderate priority subwatersheds, are all considered in long-term recovery objectives.

The identification process for the ACS priority subwatersheds utilized all the information provided by the multi-scale PFC assessment (described under ACS Component #6) to identify the conservation and high priorities for restoration. The LRMP Revision Team met with Forest

and district fish biologists and identified on small subbasin maps the subwatersheds to serve as the short-term (3-15 years) "blueprint" for recovery of listed fish species. Additional criteria used to select ACS priority subwatersheds were as follows:

- Subwatersheds identified for a "conservation" restoration (see definition under ACS 7 of this Opinion) strategy automatically became ACS priority subwatersheds;
- ACS priority subwatersheds had to be hydrologically linked to either a strong or depressed population of listed species (except in the subbasins without listed fish species; then selection incorporated native cutthroat trout, wood river sculpin or redband trout);
- In subbasins where listed fish species have limited distribution or are absent entirely, emphasis was placed on identifying the subwatersheds with the best aquatic habitat adjacent to those occupied by listed or sensitive fish species;
- There was a conscious attempt to develop a network of well-dispersed ACS priority subwatersheds within the subbasin to help limit the potential impacts of stochastic events on listed fish populations; and,
- Recognition that restoration would be more effective if a full spectrum of activities were focused on a feasible amount of subwatersheds (2-5 per subbasin) within the planning period (10-15 years).

This network of ACS priority subwatersheds establishes the short-term priorities for the overall management emphasis on recovery of listed fish species, and for the prioritization of restoration. There were a few notable exceptions within ACS priority subwatersheds where active management or higher risk MPCs overlay high fish and water quality values, such as the Wardenhoff-Bear subwatershed in Lower Johnson Creek (Boise NF MA #21) subbasin. In these situations, additional MA direction was applied to further reduce potential for negative effects to listed fish species and water quality. Examples of this type of additional MA direction and how it was applied to the Wardenhoff-Bear subwatershed follows:

> *Standard* – In the MPC 5.1 portion of the Lower Johnson Creek MA, ground-disturbing activities associated with vegetation management actions, and associated road construction and reconstruction, shall be designed in a manner that the project-level NEPA analysis and related BA will demonstrate that adverse effects to TEPC species or their habitats are avoided unless outweighed by demonstrable short- or long-term benefits to those TEPC species or their habitats.
>
> *Standard* – New roads shall not be built except to replace existing roads in RCAs or directly repair human-caused damage to TEPC fish habitat in streams unless it can be demonstrated through the project-level NEPA analysis and related BA that adverse effects to TEPC species or their habitats are avoided unless outweighed by demonstrable short- or long-term benefits to those TEPC species or their habitats.
>
> *Standard* *- New roads and landings shall be located outside of RCAs in the MPC 5.1 portion of the Lower Johnson Creek subwatershed, unless it can be demonstrated through the project-level NEPA analysis and related BA that:

1. For resources that are within their range of desired conditions, the addition of a new road or landing in an RCA shall not result in degradation to those resources unless outweighed by demonstrable short- or long-term benefits to those resource conditions; and
2. For resources that are already in a degraded condition, the addition of a new road or landing in an RCA shall not further degrade nor retard attainment of desired resource conditions unless outweighed by demonstrable short- or long-term benefits to those resource conditions; and
3. Adverse effects to TEPC species or their habitats are avoided unless outweighed by demonstrable short- or long-term benefits to those TEPC species or their habitats.

* An exception to this standard is where construction of new roads in RCAs is required to respond to reserved or outstanding rights, statute or treaty, or respond to emergency situations (e.g., wildfires threatening life or property, or search and rescue operations).

*Standard* – In the Lower Johnson Creek MA, except for the MPC 5.1 portion, do not reopen classified roads in Level 1 maintenance status or Level 2 roads that have become impassable unless it can be demonstrated through the project-level NEPA analysis and related BA that:

1. For resources that are within their range of desired conditions, reopening these roads for use shall not result in degradation to those resources unless outweighed by demonstrable short- or long-term benefits to those resource conditions; and
2. For resources that are already in a degraded condition, reopening these roads shall not further degrade nor retard attainment of desired resource conditions unless outweighed by demonstrable short- or long-term benefits to those resource conditions; and
3. Adverse effects to TEPC species or their habitats are avoided unless outweighed by demonstrable short- or long-term benefits to those TEPC species or their habitats.

Where reopening these roads cannot meet these constraints, consider decommissioning. An exception to this standard is where reopening Level 1 or 2 classified roads is required to respond to reserved or outstanding rights, statute or treaty, or respond to emergency situations (e.g., wildfires threatening life or property, or search and rescue operations).

*Guideline* - Within MPC 5.1, road construction and reconstruction may occur where needed:

1. To provide access related to reserved or outstanding rights; or
2. To respond to statute or treaty: or
3. To achieve restoration and maintenance objectives for vegetation, water quality, aquatic habitat, or terrestrial habitat; or
4. To support management actions taken to reduce wildfire risks in wildland-urban interface areas; or
5. To meet access and travel management objectives.

### *f. ACS #6 - Multi-scale Analysis*

***Introduction.*** To effectively prioritize key watersheds and prioritize/coordinate restoration activities within those watersheds across the range of listed fish species, NOAA Fisheries and FWS identified the need for multi-scale analyses. To address this need under interim direction, the NOAA Fisheries and FWS 1998 LRMP Opinions required completion of at least one subbasin assessment (mid-scale analysis) per year, and one watershed analysis (fine-scale analysis) per Forest, per year (beginning in the year 2000).

At this rate, the Forest Service estimated that it would take nearly two decades to complete this level of analysis across the SWIE. As support for restoration or conservation strategies for the species, this was believed to be insufficient to make meaningful progress. Therefore, the SWIE explored other options to develop and assess data needed to support a plan-level ACS and to provide the foundation for future assessments to support Revised LRMP implementation. It was critical that this process could be accomplished within existing funding levels, would meet required and meaningful timeframes, and be able to be effectively and efficiently updated and adapted as new information became available. The multi-scale Proper Functioning Condition (PFC) assessment was developed to serve this need.

***Purpose of Multi-scale PFC Assessment.*** The PFC assessment was based on a core set of goals and objectives at both the subbasin and subwatershed scale, an assessment continually updated over the six-year development phase of the Revised LRMPs. A brief summary of the purposes for conducting the multi-scale subbasin and subwatershed PFC assessments follows:

At the subbasin scale, the purposes were to:

1. Determine subbasin characterization, population and environmental baseline PFC conditions based on the six major WCI Pathways from the SWIE Matrix (LRMP Appendix B);
2. Establish consistent subbasin-wide context for assessing human and ecosystem processes that affect aquatic habitat and water quality conditions and management direction;
3. Assess listed fish and other native fish species status and condition at the subpopulation and or core area, as well as risks and opportunities to reduce potential unwanted effects from management actions and land uses (e.g., road-related impacts), and to better balance short- and long-term, and mid- and fine-scale risks;
4. Provide an understanding of how the project area for listed fish species fits into the broad-scale ecosystem, examine relationships of this ecosystem that are apparent only at the mid-scale, and provide context and priority for fine-scale analyses;
5. Identify risks and opportunities to meet broad-scale (e.g. Final Basinwide Salmon Recovery Strategy, ICBEMP Science Assessment, IIT Road Density Analysis Teams Report, etc.) and mid-scale (e.g. Draft Bull Trout Recovery Plan, 1998 NMFS LRMP BO, etc.) objectives through subsequent site-specific management actions (e.g., status of low road density areas, forest vegetation management actions associated with the National Fire Plan and the President's Healthy Forest Initiative);
6. Prioritize opportunities for short- and long-term recovery of ESA-listed fish species and de-listing of water quality impaired waterbodies, watershed and aquatic restoration, and monitoring and data collection;
7. Provide the context for assessing short-term adverse effects from restoration actions relative to long-term benefits for the ACS resources;

8. Provide context for subwatershed-scale information and recommendations to support land use planning, consultation, and legal requirements such as, NEPA, ESA, and the CWA; and,
9. Serve as a basis for completing fish viability analyses (refer to LRMP BA, Chapter VI, *Effects Analysis*).

At the subwatershed level, the purposes were to:

1. Identify the probable existing condition of subwatersheds and aquatic systems at a consistent scale of resolution;
2. Identify subwatershed priorities within each subbasin that form a network of high-quality habitats that can serve as refugia, and adjacent subwatersheds with lower-quality habitat that can be restored and become future sources of habitat recolonization, providing for short- and long-term recovery of listed fish species;
3. Identify consistently the type of restoration strategy appropriate for each subwatershed (based on the current conditions, causes of conditions, and vulnerability) to aid in improving water quality and fish habitat;
4. Serve as a basis and rationale to apply appropriate MPCs to specific subwatersheds;
5. Establish a consistent subwatershed-wide context for aquatic habitat and water quality management direction, including WCI identification (see ACS #2) and RCA delineation (see ACS #3), based on the associated beneficial uses and current conditions;
6. Provide the hydrologic characterization and subwatershed condition and identification of any pollutant sources;
7. Evaluate potential actions in the context of an overall understanding of the current conditions, capabilities, limitations, and risks of a specific subwatershed (e.g., the short- and long-term risks to listed fish, water quality, and long-term soil productivity associated with managing uncharacteristic wildfire conditions in wildland-urban interface areas);
8. Refine management direction to address local subwatershed conditions and water quality and listed fish species values at risk;
9. Serve as subunits in completing fish viability analysis at the subbasin scale; and,
10. Serve as a basis for developing a Forest-wide monitoring plan.

Information derived through these multi-scale PFC assessments can be stepped up or stepped down to assist in developing and applying Forest-wide goals and objectives, management direction, MPC, or MA level direction, while helping to set the context for project-level planning.

The multi-scale assessment process used to help develop the ACS can be easily updated as new information becomes available. This was important, because the assessments were intended to continue to provide the context for project-level planning and design throughout the planning period, accomplished according to Forest-wide SWRA Objective 17 which states that the WARS

environmental baseline is to be updated every 2 years with available data and new science findings resulting from future analyses completed at multiple scales. These updates will ensure that the ACS would be kept current and continue to work toward recovery of listed fish species and assist in the de-listing of water quality impaired waterbodies.

***SWIE Multi-scale PFC Approach.*** In development of a comprehensive ACS, the completion of a multi-scale PFC assessment and analysis across the three Forests was necessary to address areas without already completed subbasin or watershed analyses and to bring analytical consistency across the SWIE. The SWIE developed a multi-scaled PFC assessment and analysis processes to address this need.

The process focused on SWRA resources and was one of the primary tools used to assess soil-hydrologic function, dynamic stream equilibrium, associated aquatic habitat, and status of ESA-listed and native fish populations for each subbasin and associated subwatershed. The level of data and information used in this process varied across the SWIE, dependent upon available subbasin assessments, watershed analysis, and existing Forest-level databases.

The SWIE includes all or portions of 29 subbasins (4$^{th}$ field HUCs), >180 watersheds (5$^{th}$ field HUCs), and >670 subwatersheds (6$^{th}$ field HUCs). Where available, data from existing subbasin assessments and watershed analyses were used to help identify priority subwatersheds, to develop restoration strategies, and priorities for subwatershed restoration (also refer to ACS Components #5 and #7). Subbasin assessments used for the process came from a variety of sources, including but not limited to: those conducted under the ICBEMP protocol, Idaho Department of Water Resource - River Basin Plans, State of Idaho Department of Environmental Quality subbasin assessments, Northwest Power Planning Council (NWPPC) subbasin summaries, etc. However, subbasin assessment and watershed analysis coverage was not complete across the entire SWIE. Table 3 identifies coverage in those subbasins occupied by anadromous fish species, providing insight into where subbasin assessments and watershed analyses contributed most to data and information used in this multi-scale PFC assessment.

**Table 3. Project Area Subbasins with Anadromous Fish, Completed Subbasin Assessments, and Percent of Subbasins where Watershed Analysis Completed**

| Subbasin Name | Subbasin Assessment Completed | % of Watershed Analyses Completed w/in Subbasin |
|---|---|---|
| Hells Canyon | Yes | 0 |
| Little Salmon River | Yes | 32 |
| Lower Middle Fork Salmon | No | 0 |
| Lower Salmon | No | 0 |
| Middle Salmon-Chamberlain | Yes | 0 |
| South Fork Salmon | Yes | 74 |
| Upper Middle Fork Salmon | No | 82 |

| Subbasin Name | Subbasin Assessment Completed | % of Watershed Analyses Completed w/in Subbasin |
|---|---|---|
| Upper Salmon | Yes | 92 |

The PFC assessment was the primary process used to gather and integrate information for the >670 subwatersheds within the project area that the Forest Service believed were needed to support the comprehensive ACS to conserve listed fish species. The assessment will continue to be important over the planning period (10 to 15 years) to ensure proper context is provided for the identification, prioritization, development, and effects analysis of restoration and other projects as the LRMPs are implemented. As additional subbasin and watershed analyses are completed, this information will be integrated into the PFC assessment process and will adjust future restoration needs, priorities, or management direction.

***PFC Assessment Method.*** The PFC assessment classified priority subwatersheds, and also determined the appropriate type of restoration needed and its priority by subwatershed (see BA Map III-2, WARS). This classification and status was founded by identifying and combining a subwatersheds associated beneficial use indicators and current biophysical conditions within each subwatershed. The 17 subwatershed beneficial use indicators used for this effort included:

1. Chinook salmon presence
2. Sockeye salmon presence
3. Steelhead presence
4. Bull trout presence
5. Native cutthroat presence
6. Native redband trout presence
7. Wood river sculpin presence
8. Chinook spawning/rearing
9. Sockeye spawning/rearing
10. Steelhead spawning/rearing
11. Bull trout stronghold
12. Bull trout highly isolated population
13. Native cutthroat stronghold
14. Native cutthroat highly isolated population
15. 303(d) impaired waterbody
16. Total Maximum Daily Loads (TMDLs)
17. Municipal supply watershed

The four biophysical conditions used to describe the priority subwatersheds, the appropriate type of subwatershed restoration, and subwatershed restoration prioritization were:

1. Geomorphic Integrity (GI);
2. Water Quality Integrity (WQI);
3. Aquatic Integrity (AI); and
4. Subwatershed Vulnerability (SV).

Each of these four conditions was also assigned an associated rating of high, moderate, or low. Criteria for these ratings are described in detail in the LRMP BA (ACS Component #7).

The analyses involved an assessment of the baseline conditions (species, ecosystem processes, and land uses), a determination of the appropriate types of restoration based on those conditions,

and a determination of restoration prioritization. Methodology used at the varying levels has been described in detail in ACS Components 6 and 7 of the LRMP BA.

***Summary.*** As described above, completion of the multi-scale PFC assessment and analysis will be a useful tool to manage at the broad-scale and work toward the sustainability and recovery of listed fish species and assist in the de-listing of 303(d) water quality listed waterbodies. This multi-scale analysis helped to show how an individual subwatershed contributed to recovery of a species within a subbasin. The ACS is intended to present an interim recovery strategy until formal recovery plans are issued for listed fish species. This analysis also identifies individual subwatersheds within a larger core area (bull trout) or populations (anadromous fish) and provides context to the larger bull trout recovery areas, and to the anadromous Snake River Evolutionarily Significant Units (ESUs). Importantly, the multi-scale assessment process used to help develop the ACS can be easily updated as new information becomes available and will provide the context for project-level planning and design.

*g. ACS #7 - Watershed Prioritization/Restoration Approach*

***Introduction.*** Fourteen ACS or assessments have been completed over the last few years in the Pacific Northwest and are identified in ICBEMP's Science Assessment (Quigley and Arbelbide 1997). The IIT Restoration Task Team (2000) provides guidance for the development of the recovery of aquatic habitat and watershed function and focuses on "active" restoration relying on P/I and 1995/1998 LRMP Opinions commitments for protection/passive restoration. In general, all of the strategies were based on similar concepts, identified the same suite of factors and processes as concerns, and proposed mitigation that included essentially the same suite of planning and protective measures. However, due to the broader scale of these efforts, what was lacking was the finer-scale identification of the type of restoration (active, passive, or conservation [defined below]), prioritization, or detail of information for Forest-level administrative units to be able to develop appropriate restoration or conservation management at finer scales. For the SWIE planning process, the multi-scale PFC assessment (ACS Component #6) was developed to accomplish the more detailed mid- and fine-scale analyses and provide the information needed to develop management direction that addressed restoration and conservation needs for subwatersheds within their respective subbasins.

ACS Component #7 identifies the appropriate type of restoration needed and its priority for subwatersheds within their respective subbasins. The multi-scale PFC assessment provided a consistent approach across subwatersheds within the SWIE, and was a key element used to: (1) select priority subwatersheds for short- and long-term recovery of listed fish species, (2) assist in the de-listing of water quality impaired waterbodies, and (3) place MPCs within MAs. The approach involved an assessment of the biophysical components of the subwatershed, integration of these to determine the type of restoration approach, then prioritization of efforts.

***Assessment of the Biophysical Components.*** The process of choosing a restoration or conservation strategy began with a judgment that determined: (1) if the subwatershed

components had been damaged by management activities and/or natural processes to the extent that it could not restore itself to regain its former characteristic functions and processes within an acceptable time period; or (2) if the subwatershed components were functionally intact (Wissmar and Beschta, 1998) The restoration prioritization was largely based on the guiding principles identified by the interagency IIT Restoration Task Team (2000).

The use of the subwatersheds GI, WQI, and SV ratings served as a basis for determining if a subwatersheds components were damaged and if so, if it had the resiliency to restore itself naturally to desired conditions within an acceptable time period (rate of recovery). These ratings were used to determine the dominant type of restoration/conservation strategies most suitable for each subwatershed. The AI information assisted in determining the subwatersheds final restoration prioritization. Refer to Appendices H, I, and J of the LRMPs for a more detailed discussion of the process and methodologies used to determine GI, WQI, SV, and AI. Refer to Chapter III of the LRMP BA, ACS Component #6 for more detailed discussion of the multi-scale PFC assessment and analyses.

***Restoration Approach.*** Comprehensive restoration of the aquatic, riparian, soil and hydrologic processes in a subwatershed was generally viewed as the overall reestablishment of a subwatersheds functions, processes, and structures, resulting in habitat within its historical range of conditions. The intent of the SWIE watershed restoration direction was to recognize the variability of natural systems while: (1) securing existing habitats that support the strongest populations of wide-ranging aquatic species and the highest native diversity and geomorphic and water quality integrities; and, (2) extending favorable conditions into adjacent subwatersheds to create a larger and more contiguous network of suitable and productive habitats; and, 3) restoring soil-hydrologic processes to ensure favorable water quality conditions for aquatic, riparian, and municipal beneficial uses that will contribute to the de-listing of listed fish species and water quality limited waterbodies.

For this process, restoration approaches were divided into two categories: restoration or conservation. They were defined as follows:

> *Restoration* - Holistic actions taken to move toward or return a habitat, ecosystem, or a community to within its desired condition after damage resulting from a natural or anthropogenic disturbance. Generally refers to the process of enabling the habitat, ecosystem, or community to resume acting or continuing to act following disturbances as if the disturbances were absent. Restoration management strategies can be active, passive, conservation, or a combination to move toward objectives.
>
> *Conservation* - Is for the protection and preservation of biotic refuges for aquatic systems and for the recolonization of adjacent subwatersheds. Such areas provide a basis for connecting riparian and channel ecosystems with the upland areas that are most ecologically intact and contain the best existing habitats. This is usually achieved by conscious decisions to allow natural events to maintain existing conditions, or move conditions to a desired status over time. Risks vary substantially depending on vegetation types, natural disturbance regimes, and introduced factors such as exotic fish species.

Restoration was further divided into two approaches: Active or Passive. These were defined as follows:

> *Active Restoration* - Usually requires mechanical activities and substantial capital investment that may include decommissioning of roads, removing culverts for sediment reduction and reopening migration corridors, hillslope treatments to reduce accelerated soil erosion, gullies and sedimentation rates, reestablishing streamflow regimes similar to natural ones, and mechanical treatment or management-ignited fire to restore vegetation components to desired vegetation conditions. The objective is to create conditions for natural hydrologic, geomorphic and biotic processes to occur (Kauffman et al. 1997; Williams et al. 1997). Rationale for active restoration must include re-establishing natural energy and material exchanges between land and water, and embrace the role of natural disturbances so that diverse physical conditions that the aquatic communities have locally adapted to can be recreated (Bisson 1998). Bisson (1998) goes on to state that habitat improvement projects that do not take into account natural disturbance processes are probably doomed to failure in the long-term.
>
> *Passive Restoration* - Generally based on administrative actions and do not always require substantial capital investment and can involve a wide range of adjustments to human activities within a subwatershed. It may include adjustments in recreational type and location of use, reductions in domestic livestock grazing numbers, implementing different grazing management systems, access management reducing open road use, etc. Sufficient time should be allowed for natural processes and functions and dynamics to restore watershed function before implementing additional management activities.

Often policy decisions or direction can help restore ecosystem function or condition without requiring additional direct expenditures. Retention of connective corridors, snags, or large shade intolerant trees such as ponderosa pine, can be done more by design than by investments. Strategies used to suppress wildfire often have long-term results affecting pattern and structure on the landscape. Restoration of favorable fire regimes can be achieved in part by how current fire policies are applied or altered.

For each subwatershed, a determination was made about the dominant type of approach: active restoration, passive restoration, or conservation. This was done based on the assessment of the biophysical components and other information in the WARS database described in ACS Component #6. Determining the appropriate type of approach does not suggest that it was the "only" type of restoration appropriate. Rather it represented the dominant restoration type within a given subwatershed and stepping down with project or site-level analyses recommending refining final restoration plans. See Section III of the LRMP BA, pages 146-147 for an overview of how the biophysical components were used to determine the appropriate approach for each subwatershed. Also see pages 147-149 for a more detailed discussion of why and where each of these approaches should be considered.

***Restoration Prioritization.*** The goals and objectives of WARS were to recognize the variability of natural systems while: (1) securing existing habitats that support the strongest populations of wide-ranging aquatic species and the highest native diversity and geomorphic and water quality integrities; and, (2) extending favorable conditions into adjacent subwatersheds to create a larger and more contiguous network of suitable and productive habitats; and, (3) restoring soil-hydrologic processes to ensure favorable water quality conditions for aquatic, riparian, and municipal beneficial uses that will contribute to the de-listing of listed fish species and CWA

303(d) water quality limited waterbodies. SWRA restoration uses active or passive restoration and/or conservation approaches, or a combination thereof, to move toward accomplishing these objectives.

According the Revised LRMPs, restoration/recovery strategies should consider humans as part of the ecosystem and restoration process, since success of restoration is at least partially based on how society values the restoration efforts. If the social commitment to restoration is high, then success is likely (Jackson et al. 1995). Consequently, in setting priorities in the SWIE, restoration of highly degraded subwatersheds in and of itself was not the only basis for priority setting as there may have been no other social values attached to that subwatershed. The Forest Service, maintains that restoration priorities should be largely based on the social values associated with the subwatersheds. Similarly, Williams et al. (1997) states, "People and their communities typically are integral components of the watersheds we seek to restore." Surrogates for these social values can be the beneficial uses identified or the types of aquatic species within a subwatershed such as threatened, endangered or sensitive species, that are listed based on social values. Restoration activities should involve the entire subwatershed and enhance many resources, not just the benefitting function that contributes the funding or initiates the action. The type (active, passive, or conservation) and priority level (low, moderate, or high) of restoration or conservation strategy should significantly contribute to the de-listing of 303(d) listed stream segments, implementing the TMDL watershed restoration plans, and recovery or protection of at-risk fish species. TMDL-assigned subwatersheds were assumed to be "functioning at risk" or "functioning at unacceptable risk" due to the fact that land disturbances were deemed significant enough to warrant 303(d) listing and development of TMDLs. However, individual subwatersheds within a TMDL-assigned subbasin may be "Functioning Appropriately." Therefore, in this analysis these areas should have received high priority levels of active or passive restoration, depending upon the individually assigned subwatershed PFC ratings.

Subwatershed restoration prioritization was largely based on the social values identified with beneficial uses serving as surrogates for this indicator. The following identifies the determination of subwatershed restoration priorities:

*A.* *High Priority*

1. Subwatersheds that contain part of stronghold for chinook salmon, sockeye salmon, steelhead trout, bull trout, or native cutthroat trout; or,
2. Anadromous Fish Spawning or Rearing Habitat; or,
3. Highly Isolated Local Population of bull trout; or,
4. Native cutthroat trout; or,
5. TMDL Watershed Restoration Plan in place

*B.* *Moderate Priority*

1. Those subwatersheds that contain any current presence of anadromous species and bull trout, including migratory habitat; or,
2. Those subwatersheds that contain any current presence of native cutthroat trout species; or,
3. Designated Critical Habitat for Snake River sockeye or chinook salmon; or,

4. Identification as a 303(d) Water Quality Impaired Waterbody; or,
5. Those subwatersheds that contain portions of a municipal supply watershed.

*C. Low Priority*

1. All remaining subwatersheds.

The WARS Map (LRMP BA Map III-2) spatially displays the selected type of subwatershed restoration and restoration priority within their respective subbasins.

### *h. ACS #8 - Monitoring & Adaptive Management*

The long-term ACS developed as part of LRMP Revision includes a comprehensive strategy for the recovery and conservation of listed, proposed and sensitive aquatic species, and includes a spatially stratified and prioritized recovery strategy. This ACS is based on an adaptive management process that allows for incorporation and integration of new information over time.

***Adaptive Management***. Forest Service planning regulations require that plans be revised every 10- to 15-years [36 CFR 219.10(g)]. One of the lessons learned from implementing the previous LRMPs is that plans need to be dynamic. In response to this need, the revised LRMPs for the SWIE took a proactive approach to ecosystem management with an adaptive management strategy to effectively move toward and maintain ecological integrity and social and economic resiliency. The intent of future management is to use a continuing process of planning, implementing, monitoring, evaluating, and incorporating new knowledge into LRMP planning to address the following:

1. Changes in resource conditions, such from large-scale wildfires or the introduction of new noxious weed species;
2. Changes in distribution or abundance of listed species under the ESA, or on the Regional Sensitive Species List. Also, listings of new species or de-listings;
3. Changes in laws, regulations, rules, or policies governing national forest management;
4. Changes in knowledge about forest management from new information, research, or experience; or,
5. Changes in listing status of water quality limited waterbodies.

The need for amending or revising direction in the Revised LRMPs will be based on three scales of monitoring:

1. *Ongoing Broad- and Mid-scale Monitoring Programs*. Continue implementation of ongoing programs [e.g., Interagency Implementation Team (IIT) Biological Opinion efforts, NWPPC subbasin planning, Lynx Conservation Assessment and Strategy, and State water quality efforts];
2. *LRMP Monitoring and Evaluation Efforts.* Chapter IV of each revised LRMP includes a detailed discussion of the proposed monitoring and evaluation efforts that have been designed to assess the effectiveness of LRMP direction and accomplishment of restoration objectives; and,
3. *Project-level Monitoring Plans.* Designed to evaluate implementation and effectiveness of LRMP direction, assess impacts on site-specific resources of concern, and gather baseline data.

Local monitoring found in the Revised LRMPs and project implementation would avoid duplication, but be compatible with broad- and mid-scale efforts. For example, monitoring under the proposed Federal Action would build upon the current IIT monitoring being conducted across the SWIE. The SWIE would work with the IIT Monitoring Task Team to make the Federal Action and IIT monitoring as complementary as possible. Because the IIT implementation monitoring data are based on the specific directions of P/I, it cannot be used directly for the Federal Action; however, it may be possible to use the same or similar format to allow SWIE implementation monitoring data to be aggregated to the basin level with the rest of the implementation monitoring data.

The IIT effectiveness monitoring team will continue its basin-level sampling, of which a percentage of subwatersheds fall within the SWIE. The effectiveness monitoring team is currently projecting to sample 226 subwatersheds across the SWIE over the 5-year sampling cycle. This number represents approximately 34% of the subwatersheds in the SWIE. The SWIE Forests will conduct their implementation monitoring in the same subwatersheds that are monitored for IIT effectiveness monitoring, since without it, the analysis of the basin-level effectiveness of implementing management of P/I, or the SWIE ACS, cannot be conducted.

The SWIE Forests also propose monitoring subwatersheds in addition to those of the IIT sample scheme to determine response to management direction and accomplishments of ACS restoration priorities. This would be based on the monitoring questions outlined in Chapter IV of the LRMPs. ACS priority subwatersheds for active restoration would be an emphasis for most aquatic resource monitoring. However, monitoring would also be focused in high and moderate/active restoration and conservation/passive restoration subwatersheds, to track changes in the environmental baseline over time.

The Continuous Assessment and Planning (CAP) framework will be used by the SWIE to accomplish adaptive management.

***CAP Process.*** The first round of planning in the 1980s required that each Forest build a plan from scratch. This effort became an all-consuming task for the Forest Service and required a big budget, many employees, and lots of time. As the time came to revise these first generation plans, planning philosophy evolved to fit the task at hand and available budget and work force.

It is important to remember that the Forest Service is proposing changes to LRMPs that have already been developed and implemented. Therefore, there have been years to determine what direction is working and what changes need to be made. In revising the LRMPs, the Forest Service focused on those areas that must be reviewed in accordance with Federal regulations, and on critical issues identified through new information, monitoring, and public concerns.

The regulations focus the revision process; "The Forest Supervisor shall determine the major public issues, management concerns, and resource use and development opportunities to be addressed in the planning process" [36 CFR 219.12(b)]. Throughout the revision process, only

those portions of the LRMP that were identified as needing change were addressed. Budget considerations were also used to validate that alternatives developed were appropriate for detailed consideration.

In June 1990, the Forest Service, in coordination with The Conservation Foundation and Department of Forestry and Natural Resources at Purdue University, published recommendations on how to improve the planning process. After reviewing the Land Management Planning Critique, Region 4 of the Forest Service adopted a more adaptive planning process, known as CAP. There are three primary goals of this process:

1. Work more collaboratively with customers and the interested public to achieve shared land management expectations;
2. Use the revision effort to create adaptive LRMPs that will meet current management needs but can be readily amended with new information; and,
3. Effectively and efficiently utilize information and analysis across scales to improve land management.

The Forest Service has already forged a strong beginning for the CAP process by adopting ecosystem management, responding to monitoring results and public concerns, changing MAs and direction, making the LRMPs more flexible, and incorporating new and valuable information from a wide variety of sources. This process will continue throughout the next planning period with the formation of a permanent CAP Team, comprised of SWIE employees, whose duties will include:

1. Fine-tuning LRMP direction and effectiveness with amendments as needed;
2. Evaluating Forest-wide effectiveness and validation monitoring, reporting results, and making any necessary changes to LRMPs; and,
3. Addressing broad-scale issues that were not covered in detail during LRMP revision, such as travel management planning.

## C. Description of the Action Area

An action area is defined by NOAA Fisheries regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal Action and not merely the immediate area involved in the action." For anadromous fish, the action area affected by the proposed action includes all habitat within eight subbasins (4$^{th}$ field hydrologic units). The subbasin names and hydrologic unit codes (HUCs) for each of the subbasins within the anadromous fish action area have been included below in Table 4. In addition to the project area, the Forest Service defined the action area to include additional adjoining subbasins outside the SWIE, where there is a potential for straying and recolonization by fish originating within the SWIE. The Pahsimeroi, Lemhi, and Middle Salmon-Panther subbasins were included in the action area for this reason. For the purpose of this Opinion, NOAA Fisheries has redefined the action area to not include these additional subbasins, including only the mainstem Salmon River through these subbasins, the only portion of these subbasins downstream from the proposed action that would be potentially affected by the action as proposed. The action area serves as migratory corridor for juveniles and adults, spawning, and rearing for EFH and the salmonid ESUs listed in Tables 5 and 6.

**Table 4. Subbasins within the Action Area for the Southwest Idaho Ecogroup (SWIE) Occupied by ESA-listed Anadromous Fish Species.**

| Basin | 4th Field HUC - Subbasin Name |
|---|---|
| Snake River Basin | 17060101- Hells Canyon |
| Salmon River Basin | 17060201 - Upper Salmon |
| | 17060205- Upper Middle Fork Salmon |
| | 17060206 - Lower Middle Fork Salmon |
| | 17060207 - Middle Salmon-Chamberlain |
| | 17060208 - South Fork Salmon River |
| | 17060209 - Lower Salmon |
| | 17060210 - Little Salmon River |

## D. Assumptions

For consideration in the effects analysis, NOAA Fisheries assumed the following:

1. ESA Section 7 consultation will continue to take place according to Streamlining Procedures (USDA Forest Service et. al, 1999) or other similar agreed upon process.

2. Standards developed under P/I, and the 1995/1998 LRMP Biological Opinions provided a suite of protective standards that adequately avoided/minimized adverse effects to ESA-listed fish species and their habitats. These protective standards provided the components of a short-term ACS specifically designed "to maintain or improve the environmental baseline" while a long-term strategy was developed that included a "comprehensive restoration and management strategy for watersheds with anadromous fish" (NMFS, 1998). By continuing to apply the bulk of these protective standards, or their equivalent, environmental baselines in watersheds containing listed anadromous fish should continue to be maintained or improved.

3. NMFS 1998 LRMP Opinion also stated, "A major weakness in PACFISH has been, and still is, the lack of a comprehensive ACS for listed anadromous fish. … Indefinite extension of PACFISH, delays the recovery of salmon and steelhead, and increases the risk that key population segments will be irretrievably lost. PACFISH maintains a fragmented network of habitats and degraded habitat conditions where they presently exist, …". Thus the assumption is development of a long-term "comprehensive restoration and management strategy for watersheds with anadromous fish" that includes protective and conservation direction, as well as restoration is essential to the recovery of list anadromous fish.
4. P/I, and the 1998 LRMP Opinions followed the approach of prescribing use of watershed analysis for specific tasks (e.g. delineation of RHCAs in priority watersheds other than by

using the "interim" values) or under specific circumstances (e.g. proposed timber sales planned in RHCAs in priority watersheds). This prescriptive approach reduced questions regarding the consistency and adequacy of analysis by requiring one agreed upon method of analysis for specified situations that potentially involve risk to the listed species or their habitat. Alternative approaches, however, may be possible or needed in some circumstances. The assumption is, regardless of the approach used, the objectives of watershed analysis can be met during the course of Forest Plan implementation (refer to the January 30, 2003, "*Findings of the Southwest Idaho (SWI) Forest Plan Revision Aquatics Review Team*" [USDA et al 2003]).

5. The "*Framework for Implementation of the Southwest Idaho Land and Resource Management Plans, Boise Payette and Sawtooth National Forests*" (USDA Forest Service et. al, 2003) will be developed and implemented. "The framework would be designed to ensure that broad goals and objectives for species conservation incorporated in each of the three Plans are realized at finer scales on these Forests." The resulting "*Framework*" process "will provide the information at the mid- (subbasin) and fine-scales (watershed/subwatershed) needed to inform project development and consultation at the site (project) scale."

6. The "*Framework*" process will be one of the key alternative approaches to traditional watershed analysis that will be used in the implementation of the Revised LRMPs to achieve the objectives of watershed analysis (refer to the January 30, 2003, "*Findings of the SWI Forest Plan Revision Aquatics Review Team*").

7. The "*Framework*" will include a process and frequency for updating information that ensures broad-scale goals and objectives for species conservation and changes in environmental baselines within the SWIE are kept sufficiently current to inform project development and consultation at the site (project) scale.

## II. ENDANGERED SPECIES ACT BIOLOGICAL OPINION

The objective of this Opinion is to determine whether the Revision of the SWIE LRMPs is likely to jeopardize the continued existence of the Snake River steelhead, sockeye salmon, spring/summer chinook salmon, fall chinook salmon, or destroy or adversely modify designated critical habitat.

### A. Evaluating the Effects of the Proposed Action

The standards for determining jeopardy and destruction or adverse modification of critical habitat are set forth in section 7(a)(2) of the ESA as defined by 50 CFR 402.02 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the

following steps of the consultation regulations and when appropriate[2] combine them with the Habitat Approach (NMFS 1999): (1) consider the status and biological requirements of the listed species; (2) describe the environmental baseline in the action area and evaluate its relevance to the species' current status; (3) determine the effects of the proposed or continuing action on the species, and whether the action is consistent with the available recovery strategy; and (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the effects of the environmental baseline, and any cumulative effects, and considering measures for survival and recovery specific to other life stages. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species or result in the destruction or adverse modification of critical habitat. If either or both are found step 5 occurs. In step 5, NOAA Fisheries may identify reasonable and prudent alternatives for the action that avoid jeopardy and/or destruction or adverse modification of critical habitat, if any exists.

The fourth step above requires a two-part analysis. The first part focuses on the action area and defines the proposed action's effects in terms of the species' biological requirements in that area (i.e., impacts on essential habitat features). The second part focuses on the species itself. It describes the action's impact on individual fish–or populations, or both–and places that impact in the context of the ESU as a whole. Ultimately, the analysis seeks to answer the questions of whether the proposed action is likely to jeopardize a listed species' continued existence or destroy or adversely modify its critical habitat.

Part of developing Reasonable and Prudent Alternatives and Reasonable and Prudent Measures is consideration of how the proposed action meets recovery goals. Recovery planning is underway for listed salmonids in the Northwest with technical recovery teams identified for each domain. Recovery planning will help identify measures to conserve listed species and increase their survival at each life stage. NOAA Fisheries also intends recovery planning to identify the areas/stocks most critical to species conservation and recovery and to thereby enable evaluation of proposed actions on the basis of their effects on those critical areas and stocks.

1. Biological Requirements in the Action Area

The listed species' biological requirements may be described in a number of different ways. For example, they can be expressed in terms of population viability using such variables as a ratio of recruits to spawners, a survival rate for a given life stage (or set of life stages), a positive population trend, or a threshold population size. Biological requirements may also be described as essential habitat features

[2] The Habitat Approach (NOAA Fisheries 1999) is intended to provide guidance to NOAA staff for conducting analyses, and to explain the analytical process to interested readers. As appropriate, the Habitat Approach may be integrated into the body of Opinions. NOAA staff are encouraged to share the Habitat Approach document with colleagues from other agencies and private entities who are interested in the premises and analysis methods.

and can be expressed in terms of physical, chemical, and biological parameters. The manner in which these requirements are described varies according to the nature of the action under consultation and its likely effects on the species or its critical habitat.

The first step NOAA Fisheries uses when applying ESA section 7(a)(2) to the listed ESUs considered in this Opinion includes defining the species' biological requirements within the action area. Relevant biological requirements are those necessary for the listed ESU's to survive and recover to naturally-reproducing population sizes at which protection under the ESA would become unnecessary. This will occur when populations are large enough to safeguard the genetic diversity of the listed ESUs, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment. See Table 5 for a listing of the interim recovery targets established by NOAA Fisheries for ESA-listed fish species potentially affected by the proposed action (NMFS 2002). The survival and recovery of these species will depend on their ability to persist through periods of low natural survival.

**Table 5. Interim Recovery Targets Established Across the SWIE for ESA-listed Fish Species under NOAA Fisheries Jurisdiction (NMFS 2002).**

| ESU/Spawning Aggregation | Interim Recovery Target |
|---|---|
| Snake River Spring/summer Chinook Salmon | 41,900 |
| Snake River Fall Chinook Salmon | 2,500 |
| Snake River Steelhead | 53,700 |
| Snake River Sockeye Salmon | 1,000 spawners in one lake;<br>500 spawners/year in 2nd lake. |

The Revised LRMPs would occur within designated critical habitat delineated for these chinook and sockeye salmon ESUs. Freshwater critical habitat includes all waterways, substrates, and adjacent riparian areas below longstanding, natural impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) and dams that block access to former habitat. Riparian areas adjacent to a stream provide the following functions: shade, sediment delivery/ filtering, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter.

Essential habitat features of critical habitat for the affected listed species include: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions. All of these essential features of critical habitat are included in a NMFS (1996) analysis framework called *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* as discussed in more detail in Section II.B.1. The Forest Service used this Matrix to evaluate the environmental baseline condition, and effects of the action on essential habitat features for affected ESA-listed fish species.

2. Status of Species

In the first step, NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species within the action area, NOAA Fisheries starts with the determinations made in its decision to list the species in the first place and also considers any new data that is relevant to the determination. This section covers the listing status, general life history, and population trends of the species, that may be affected by the proposed actions.

The LRMP Revisions have been found, by the action agency, likely to adversely affect the ESA-listed species and designated critical habitat identified below in Table 6. Based on the life histories of these ESUs, it is likely that incubating egg, juvenile, smolt, and adult life stages of each of these listed species would be adversely affected by the Revised LRMPs.

**Table 6. References for Additional Background on Listing Status, Protective Regulations, and Critical Habitat Elements for the ESA-Listed and Candidate Species Considered in this Consultation.**

| Species ESU | Status | Critical Habitat | Protective Regulations |
|---|---|---|---|
| **Chinook salmon (*O. tshawytscha*)** | | | |
| Snake River fall | Threatened; April 22, 1992; 57 FR 14653[3] | December 28, 1993; 58 FR 68543 | July 10, 2000; 65 FR 42422 |
| Snake River spring/summer | Threatened; April 22, 1992; 57 FR 14653[2] | October 25, 1999; 64 FR 57399[4] | July 10, 2000; 65 FR 42422 |
| **Sockeye salmon (*O. nerka*)** | | | |
| Snake River | Endangered; November 20, 1991; 56 FR 58619 | December 28, 1993; 58 FR 68543 | ESA section 9 applies |
| **Steelhead (*O. mykiss*)** | | | |
| Snake River Basin | Threatened; August 18, 1997; 62 FR 43937 | N/A | July 10, 2000; 65 FR 42422 |

[3] Also see, June 3, 1992; 57 FR 23458, correcting the original listing decision of by refining ESU ranges.

[4] This corrects the original designation of December 28, 1993 (58 FR 68543) by excluding areas above Napias Creek Falls, a naturally impassable barrier.

*a. Snake River Sockeye Salmon (Oncorhynchus nerka)*

The Snake River sockeye salmon ESU was listed as endangered on November 20, 1991, (56 FR 58619) and includes populations of sockeye salmon from the Snake River basin, Idaho (extant populations occur only in the Salmon River subbasin). Under NOAA Fisheries' interim policy on artificial propagation (58 FR 17573), the progeny of fish from a listed population that are propagated artificially are considered part of the listed species and are protected under ESA. Thus, although not specifically designated in the 1991 listing, Snake River sockeye salmon produced in the captive broodstock program are included in the listed ESU.

Snake River sockeye salmon enter the Columbia River in late spring and early summer and reach the spawning lakes in late summer and early fall. The entire mainstem Salmon River has been designated as critical habitat for sockeye salmon (57 FR 68543, December 28, 1993), but all spawning and rearing habitat is located in the Upper Salmon subbasin.

Historically Snake River sockeye salmon were found in headwater lakes along tributaries of the Snake River including: five lakes in the upper Salmon River drainage, Payette Lake on the North Fork Payette River, and Wallowa Lake on the Grande Ronde River. Sockeye may have also used Warm Lake, a tributary lake of the South Fork Salmon River. Within the Upper Salmon subbasin, sockeye salmon were found in Redfish, Alturas, Pettit, Stanley, and possibly Yellowbelly Lakes (Chapman et al. 1990). Sockeye salmon pass Bonneville Dam from June 1 to July 31, and Lower Granite Dam from June 25 to August 30, on their 850-mile migration to spawning grounds of the upper Salmon River.

Snake River sockeye salmon have declined dramatically as a result of fishery management policy, overharvest, hydropower-caused mortality, and irrigation water withdrawals. Only the lakes of the upper Salmon River basin remain as potential sockeye producers. Payette Lakes and Wallowa Lake are blocked to sockeye by hydropower or irrigation dams (Chapman et al. 1990). Sockeye access to the Payette basin was eliminated in 1923 with the construction of Black Canyon Dam. The Sunbeam Dam on the Salmon River blocked sockeye from Redfish Lake and all other Lakes in the upper Salmon River from 1910 to 1934. The run was reestablished by anadromous kokanee by the late 1940's after the dam was breached. Irrigation diversions in Alturas Lake Creek eliminated return of sockeye to Alturas Lake. In 1997, the Idaho Fish and Game (IDFG) removed the irrigation diversion to help with reintroduction efforts to Alturas Lake.

The IDFG poisoned and eradicated kokanee/sockeye in Yellowbelly, Pettit, and Stanley lakes to convert the lakes to trout production. IDFG introduced Montana and Pend O'reille kokanee to Redfish Lake in the 1940's, and introduced Babine Lake sockeye to at least Alturas and Stanley lakes in the early 1980's.

Based on critically low population numbers, IDFG in cooperation with NOAA Fisheries, Shoshone-Bannock Tribe, Bonneville Power Administration, University of Idaho, and others

initiated a conservation program in 1991. A captive brood program was established for the reintroduction of sockeye into Redfish Lake, Pettit Lake, and Alturas Lake. There are currently no plans to expand the program to include Stanley or Yellowbelly Lakes.

Escapement of sockeye salmon to the Snake River has declined dramatically in the last several decades. Adult counts at Ice Harbor Dam declined from 3,170 in 1965 to zero in 1990 (57 FR 68543). At Redfish Lake Creek, adult counts dropped from 4,361 in 1955 to fewer than 500 after 1957 (Bjornn et al. 1968). A total of 16 wild sockeye salmon returned to Redfish Lake between 1991 and 2000. In 2001, 55 adult sockeye were counted at Lower Granite Dam (Fish Passage Center 2002), with 26 fish returning to trapping sites in the Stanley Basin (Redfish Lake or Sawtooth Hatchery) (Pollard 2003). In 2002, 52 adult sockeye were counted at Lower Granite Dam (Fish Passage Center 2002), with 23 fish returning to trapping sites in the Upper Stanley Basin (Pollard 2003).

Sockeye survival from smolt to adult has declined by an estimated 74-81% since the early 1960's, correlated with hydropower development. NOAA Fisheries has not estimated the risk of absolute extinction for the Snake River sockeye salmon (though the estimates were made for the other listed species, see below) because this ESU is currently at extremely low abundances and maintained through a captive broodstock program (McClure et al. 2000).

*b. Snake River Spring/Summer Chinook Salmon (O. tshawytscha)*

The Snake River spring/summer chinook salmon ESU, listed as threatened on April 22, 1992 (67 FR 14653), includes all natural-origin populations in the Tucannon, Grande Ronde, Imnaha, and Salmon Rivers. Some or all of the fish returning to several of the hatchery programs are also listed including those returning to the Tucannon River, Imnaha, and Grande Ronde hatcheries, and to the Sawtooth, Pahsimeroi, and McCall hatcheries on the Salmon River. Critical habitat was designated for Snake River spring/summer chinook salmon on December 28, 1993 (58 FR 68543).

In the SWIE, spawning and rearing spring/summer chinook salmon occur in a wide range of streams across the Salmon River subbasin. Bevan et al (1994) estimated the number of wild adult Snake River spring/summer chinook salmon in the late 1800s to be more than 1.5 million fish annually. By the 1950s, the population had declined to an estimated 125,000 adults. Escapement estimates indicate that the population continued to decline through the 1970s. Redd count data also show that the populations continued to decline through about 1980.

Snake River wild spring/summer chinook salmon runs, as counted at the Lower Granite dam, have dwindled from an average of about 60,000 adults in the early to mid-1960s to a few thousand in recent years. Over the last 10 years (1992 to 2001), which includes the year of listing (1992), returns of wild/natural fish ranged from 183 in 1994, to 12,475 in 2001 and averaged 3,314. The estimated smolt production capacity of 10 million smolts for rivers in Idaho, coupled with historic smolt-to-adult return rates of two percent to six percent, indicate Idaho could produce wild/natural runs of 200,000 to 600,000 adults (Fish Passage Center 2002). The recent low numbers are reflected throughout the entire distribution of the chinook salmon subpopulations scattered throughout the Grande Ronde, Imnaha, and Salmon River Basins. The percentage of adult fish that actually return to the upper Salmon River above North Fork of the Salmon River is approximately five percent of upper Salmon River juvenile fish passing Lower Granite Dam (Bjornn et al 1996).

Even though in 2001 and 2002 there were record returns (hatchery and natural origin combined), natural origin fish numbers are in general very low in comparison to historic levels (Bevan et al 1994). Average returns of adult Snake River spring/summer chinook salmon (averaging 3,314 over the last 10 years) are also low in comparison to interim target species recovery levels of 41,900 for the Snake River Basin (NMFS 2002). The low returns amplify the importance that a high level of protection be afforded to each adult chinook salmon, particularly because a very small percentage of salmon survive to the life stage of a returning, spawning adult, and because these fish are in the final stage of realizing their reproductive potential (approximately 2,000 to 4,000 progeny per adult).

NOAA Fisheries estimates that the median population growth rate (lambda) for the Snake River spring/summer chinook ESU as a whole, from 1980-1997, ranges from 0.96, assuming no reproduction by hatchery fish in the wild, to 0.80, assuming that hatchery fish reproduce in the river at the same rate as wild fish (Tables B-2a and B-2b in McClure et al. 2000). The proportion of hatchery fish in the Snake River spring/summer chinook population has been increasing with time; consequently, growth rates for the wild spring/summer chinook population are overestimated unless corrected for hatchery influence. The degree of hatchery influence is unknown. NOAA Fisheries estimated the risk of absolute extinction considering a range of assumptions about the relative effectiveness of hatchery fish. At the low end, assuming that hatchery fish spawning in the wild have not reproduced (i.e., hatchery effectiveness = 0), the risk of absolute extinction within 100 years is 0.40 for Snake River chinook (Table B-5 in McClure et al. 2000). At the high end, assuming that the hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness = 100%), the risk of absolute extinction within 100 years is 1.00 (Table B-6 in McClure et al. 2000).

*c. Snake River Fall Chinook Salmon (O. tshawytscha)*

The Snake River fall chinook salmon ESU, listed as threatened on April 22, 1992, (67 FR 14653), includes all natural populations of fall chinook salmon in the mainstem Snake River below Hell's Canyon Dam, and the Tucannon, Grande Ronde, Imnaha, Salmon, and Clearwater Rivers. Fall chinook from the Lyons Ferry Hatchery are included in the ESU but are not listed. Critical habitat was designated for Snake River fall chinook salmon on December 28, 1993, (58 FR 68543).

The historic distribution of fall chinook salmon is limited in the SWIE, occurring only on the Payette NF in large mainstem rivers and tributaries to the Snake and Salmon Rivers. The current distribution of fall chinook salmon potentially affected by the Revised LRMPs is located along the lower/middle main Salmon River, from the mouth upstream to approximately its confluence with French Creek. Counts of returning wild fall chinook salmon at Lower Granite Dam from 1975 through 1980 averaged 600 fish per year (Waples et al. 1991). From 1985 to 1999 an average of 459 naturally produced fall chinook salmon reached Lower Granite Dam (USDI BLM 2000). In recent years, two fall chinook satellite hatchery facilities have been operated on the Snake River to increase the numbers of fall chinook salmon. The facilities are used to acclimate and release one-year smolts from Lyons Ferry hatchery.

The Snake River component of the fall chinook run has been increasing during the past few years as a result of the hatchery and supplementation efforts in the Snake and Clearwater River basins. Greater than 15,000 adult fall chinook were counted past the two lower projects with about 12,400 counted above Lower Granite Dam. These adult returns are about triple the 10-year average at these Snake River projects (Fish Passage Center 2002). Detailed information on the current range-wide status of Snake River chinook salmon under the environmental baseline, is described in the chinook salmon status review (Myers et al. 1998).

NOAA Fisheries estimates that the median population growth rate (lambda) for the Snake River fall chinook ESU as a whole, from 1980-1997, ranges from 0.94, assuming no reproduction by hatchery fish in the wild, to 0.86, assuming that hatchery fish reproduce in the river at the same rate as wild fish (Tables B-2a and B-2b in McClure et al. 2000). The proportion of hatchery fish in the Snake River fall chinook population has been increasing with time; consequently, growth rates for the wild fall chinook population are overestimated unless corrected for hatchery influence. The degree of hatchery influence is unknown. NOAA Fisheries estimated the risk of absolute extinction considering a range of assumptions about the relative effectiveness of hatchery fish. At the low end, assuming that hatchery fish spawning in the wild have not reproduced (i.e., hatchery effectiveness = 0), the risk of absolute extinction within 100 years is 0.40 for Snake River chinook (Table B-5 in McClure et al. 2000). At the high end, assuming that the hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness = 100%), the risk of absolute extinction within 100 years is 1.00 (Table B-6 in McClure et al. 2000).

*d. Snake River Steelhead (O. mykiss)*

The Snake River steelhead ESU, listed as threatened on August 18, 1997 (62 FR 43937), includes all natural-origin populations of steelhead in the Snake River basin of Southeast Washington, northeast Oregon, and Idaho. None of the hatchery stocks in the Snake River basin are listed, but several are included in the ESU. Critical habitat for Snake River steelhead was administratively withdrawn on April 30, 2002, therefore critical habitat is not designated at this time.

Natural runs of Snake River steelhead have been declining in abundance over the past decades. Some

of the significant factors in the declining populations are mortality associated with the many dams along the Columbia and Snake Rivers, losses from harvest, loss of access to more than 50% of their historic range, and degradation of habitat used for spawning and rearing. Possible genetic introgression from hatchery stocks is another threat to Snake River steelhead since wild fish comprise such a small proportion of the population. Additional information on the biology, status, and habitat elements for Snake River steelhead are described in Busby et al. (1996).

The 2000 and 2001 counts at Lower Granite Dam indicate a two-year increase in returning adult spawners. Adult returns (hatchery and wild) in 2001 were the highest in 25 years and 2000 counts were the sixth highest on record (Fish Passage Center 2001a). Increased levels of adult returns are likely a result of favorable ocean and instream flow conditions for these cohorts. Although steelhead numbers have dramatically increased, wild steelhead comprise only 10% to 20% of the total returns since 1994. Consequently, the large increase in fish numbers does not reflect a change in steelhead status based on historic levels. Recent increases in the population are not expected to continue, and the long-term trend for this species indicates a decline.

Survival of downstream migrants in 2001 was the lowest since 1993. Low survival was due to record low water run-off, and elimination of spills from the Snake River dams to meet hydropower demands (Fish Passage Center 2001b). Average downstream travel times for steelhead nearly doubled and were among the highest observed since recording began in 1996. Consequently, wide fluctuations in population numbers are expected over the next few years when adults from recent cohorts return to spawning areas. Detailed information on the current range-wide status of Snake River steelhead, under the environmental baseline, is described in the steelhead status review (Busby et al. 1996), status review update (BRT 1997), and the draft Clearwater Subbasin Summary (CBFWA 2001).

NOAA Fisheries estimates that the median population growth rate (lambda) for the Snake River steelhead ESU as a whole, from 1980-1997, ranges from 0.91, assuming no reproduction by hatchery fish in the wild, to 0.70, assuming that hatchery fish reproduce in the river at the same rate as wild fish (Tables B-2a and B-2b in McClure et al. 2000). The proportion of hatchery fish in the Snake River steelhead population has been increasing with time; consequently, growth rates for the wild steelhead population are overestimated unless corrected for hatchery influence. The degree of hatchery influence is unknown. NOAA Fisheries estimated the risk of absolute extinction for the A- and B-runs, considering a range of assumptions about the relative effectiveness of hatchery fish. At the low end, assuming that hatchery fish spawning in the wild have not reproduced (i.e., hatchery effectiveness = 0), the risk of absolute extinction within 100 years is 0.01 for A-run steelhead and 0.93 for B-run fish (Table B-5 in McClure et al. 2000). At the high end, assuming that the hatchery fish spawning in the wild have been as productive as wild-origin fish (hatchery effectiveness = 100%), the risk of absolute extinction within 100 years is 1.00 for both runs (Table B-6 in McClure et al. 2000).

3. Environmental Baseline in the Action Area

The environmental baseline is defined as: "the past and present impacts of all Federal, state, or private actions and other human activities in the action area, including the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of state and private actions that are contemporaneous with the consultation in progress" (50 CFR 402.02). In step 2 of NOAA Fisheries' analysis, it evaluates the relevance of the environmental baseline in the action area to the species' current status. In describing the environmental baseline, NOAA Fisheries evaluates essential habitat features of designated critical habitat and the listed salmonid ESUs affected by the proposed action.

It is helpful to discuss the environmental baseline in light of the species' essential habitat features. For proposed actions that affect habitat, NOAA Fisheries often characterizes essential habitat features in terms of a concept called properly functioning condition (PFC). PFC is the sustained presence of natural habitat-forming processes in a watershed (*e.g.*, riparian community succession, bedload transport, precipitation runoff pattern, channel migration) that are necessary for the long-term survival of the species through the full range of environmental variation. PFC, then, constitutes the habitat component of a species' biological requirements. The indicators of PFC vary between different landscapes based on unique physiographic and geologic features.

In general, the environment for listed species in the Columbia River Basin, including those that migrate past or spawn downstream from the action area, has been dramatically affected by the development and operation of the Federal Columbia River Power System (FCRPS). Forestry, farming, grazing, road construction, mining, and urbanization have also radically reduced the quantity and quality of historic habitat conditions in much of the basin. To address problems inhibiting salmonid recovery in Columbia River Basin tributaries, Federal agencies developed the Basinwide Recovery Strategy (All H Strategy). A component of the All-H Strategy is a habitat conservation approach that commits Federal agencies to increased coordination, a fast start on habitat protection and restoration, and lays a foundation for long-term habitat strategies geared to the unique conditions of each subbasin and watershed.

*a. Baseline Approach and Assumptions*

The SWIE Matrix, located in Appendix B of the revised LRMPs, was used as a template to characterize environmental baseline conditions relative to specific pathways. The pathways represent ways by which actions can potentially affect the listed species and their habitat. The

intent was to have a simple, yet holistic suite of pathways to characterize environmental baseline conditions, while also providing a level of uniformity and standardization in the subbasin baseline descriptions.

The environmental baseline in the action area was not solely due to actions authorized or administered by the SWIE Forests. In some cases, land and water uses managed by other entities, and other

factors, including natural disturbances, have had a great effect on pathway conditions at the subbasin scale. In addition, factors outside the action area, such as Snake River and mainstem Columbia River hydropower projects, ocean and river harvest, hatchery influences, and downstream habitat conditions, play a role in determining the status of migratory fish populations that spawn and rear in streams within the action area. These factors are recognized as contributing to the decline in numbers of the ESA-listed fish.

Baseline descriptions were completed by subbasin in the LRMP BA (USDA Forest Service 2003d). Each description begins with an introduction that describes the size, watershed composition, land ownership, and general characteristics within the subbasin. Baseline conditions are further described by the following SWIE Matrix pathways: population characteristics (bull trout only), watershed conditions, water quality, habitat access, channel conditions/dynamics, flow/hydrology, and integration of species and habitat information (see LRMP Appendix B for complete SWIE Matrix). These pathways, and the information sources used for them, are briefly described below.

***Watershed Conditions*.** To characterize overall watershed conditions, the habitat elements and watershed conditions pathways of the matrix were combined under this heading. Road densities and locations, and disturbance history as reflected by Equivalent Clearcut Area (ECA), act to influence habitat parameters such as peak/base flows, large woody debris, pool quality and frequency, substrate conditions, riparian quality, etc. Information was available in the WARS database for road densities, and ECA values (harvest history and wildfire) were calculated for all subwatersheds within the SWIE Forest administrative boundaries, and were used as a basis for rating overall watershed conditions.

Subwatershed vulnerability is a criterion developed through the course of LRMP Revision and provides an indication of the inherent sensitivity (soil erosion and sediment yields) of disturbance on watershed conditions and resiliency or natural ability for restoration. Subwatershed vulnerability (located in the WARS database) was assessed for each subwatershed within the SWIE, and was used as an indicator of overall watershed conditions.

***Water Quality*.** The WARS database was used to tally the number of subwatersheds with 303(d) listed, water quality limited waterbodies (from the Idaho Department of Environmental Quality [IDEQ] 1998 list), and those with TMDLs in place. This provided the most consistent assessment of water quality across the subbasins. IDEQ subbasin assessments and TMDL plans and findings were used as a source to evaluate water quality and draw conclusions for the basis of the rating. Other information sources used were Forest Service BAs, subbasin plans and watershed assessments, and local knowledge of impairments to water quality.

***Habitat Access.*** As an indicator of habitat access, an assumption was made that an unknown number of road/stream crossings in each subbasin at least hinder or impair access because of inadequate culverts, bare fords, collapsed bridges, etc. The WARS database was used to count the number of crossings in each subwatershed on both perennial and intermittent streams (from a GIS exercise) associated with system and non-system roads. This may underestimate the actual number of crossings and potential access impairments because it is limited to SWIE Forest administered lands (i.e., project

area only). The database does not identify how many crossings are actually limiting access, but by identifying subwatersheds with high occurrences of crossings, an indication of those most likely to have fish passage problems was developed. Known barriers to migration were also identified in each subbasin description. In addition to the WARS database, existing BAs, and knowledge of other crossing or access problems were used to arrive at an evaluation of access conditions.

***Channel Conditions and Dynamics*.** Damaged stream segments were identified during the Inland West Watershed Initiative (IWWI) exercise and these data were used to assist in evaluating channel conditions and dynamics. Damaged stream segments are those in which physical, chemical, or biological impacts have caused serious damage to water-related resource values. The damaged segment data set identified stream segments with bank damage, channel modification, and/or flow disruption (and other factors). These were used as indicators of altered channel conditions. Where more site-specific data were available, it was included to help identify known problem areas.

Also considered for the pathway, the baseline condition generally described the number of road miles within RCAs (available in WARS database). The assumption was made that where roads are within RCAs, they may be affecting connectivity and altering stream channels by straightening, hardening, and/or relocating them. However, the accuracy of drawing conclusions about channel conditions generally, from miles of road in RCAs, has not been tested. Road variables such as orientation, proximity to stream channels, and miles of road in valley bottom or floodplain were not available in the WARS database. Other sources were used (BAs, watershed assessments, etc.) to supplement this information and evaluate channel conditions and dynamics.

***Flow/Hydrology.*** ECA and road densities can affect flow and hydrologic characteristics and were used as indicators of alterations to flow and hydrologic patterns. The IWWI Data set has a field for damaged segments listed for flow disruptions, which was used as well. The ECA of a subwatershed plays a major role in the ability of the watershed to hold water. Stream network increase, as a result of road construction, has a large impact on the amount of water reaching the stream channel. Other known disruptions to flow from dams, diversions, and water withdrawals as documented in BAs, IDEQ documents, other Forest Service documents were used to evaluate the level of disruption of normal flow patterns and arrive at a basis for a rating.

*b. SWIE Environmental Baseline*

A brief overview of the environmental baseline for the action area is provided below by SWIE Matrix pathway. Table 7 summarizes the baseline condition by functionality call (e.g., functioning appropriately, functioning at risk, or functioning at unacceptable risk) and pathway for anadromous fish subbasins within the action area. Detailed descriptions of the environmental baseline can be found for each subbasin in Chapter VI of the LRMP BA (USDA Forest Service 2003d).

***Watershed Conditions.*** This pathway encompasses a number of indicators of habitat condition. Overall watershed conditions are functioning at risk in all subbasins, except for Hells Canyon (local, isolated effects occur in this subbasin but are not widespread across the entire subbasin). Watershed conditions overall are not functioning at an unacceptable level of risk in any subbasin, but individual indicators are, in parts of some subbasins.

Continued effects from past land use activities, such as mining, grazing, road construction and locations, and timber harvest, degrade overall watershed conditions. Road densities and road locations often contribute to degraded watershed conditions in SWIE subbasins, because of their effect on LWD, riparian conditions, and sediment delivery. Generally, combined effects of past and present land management actions and facilities are contributing to degraded watershed conditions and a functioning at risk condition. Past riparian disturbance has occurred in association with land use activities in most subbasins. Overall watershed conditions are a result of mostly past activities (prior to P/I), and existing facilities (most notably roads) that degraded overall conditions, primarily in riparian areas.

***Water Quality.*** Water quality degradation generally relates to land disturbances and associated increased erosion. Mining, and agricultural uses that occur primarily off-Forest degrade water quality as well. Water quality is functioning at risk in most subbasins. The water quality in the Little Salmon River is functioning at an unacceptable level of risk. One subbasin, the Lower Middle Fork Salmon, has water quality functioning appropriately. All but one or two subbasins contain stream segments listed as impaired in IDEQs 1998 303(d) list. Seven subbasins contain waters associated with TMDLs. Sediment is contributing to degraded water quality, as is elevated water temperature. Heavy metals, nutrient loading, and chemical contamination contribute to degraded water quality in some subbasins.

***Habitat Access.*** Habitat access is the pathway found to most often be functioning at an unacceptable level of risk. It was also the pathway with the most functioning appropriately ratings. Aside from the large dams (Hells Canyon Complex, etc.), there are numerous physical passage impairments and barriers (small dams and impoundments, diversions, etc.) to fish movement in SWIE subbasins. With the exceptions of road stream crossings, most of these obstructions are on private land.

***Channel Condition and Dynamics.*** Except for the Hells Canyon subbasin which is functioning appropriately, this pathway is functioning at risk in all anadromous fish subbasins. Except for Hells Canyon, all subbasins have damaged stream segments and all roads within RCAs. Both of these factors contribute to degraded channel conditions and dynamics in SWIE streams. Some subbasins have high width to depth (w:d) ratios and bank stabilities less than 80%, reducing function of the pathway. Human activities, primarily timber harvest, road construction, and grazing, have reduced linkages between floodplains, wetlands, and main channels in SWIE subbasins.

***Flow/Hydrology.*** The greatest effect to this pathway is from water diversions, impoundments, and channel de-watering. These factors affect this pathway on private land more than on SWIE lands. These factors seem to influence flows more than ECA and roads, although many subbasins include

ECA and road densities and locations as rationale for an "at risk" rating. Extensive irrigation in some subbasins (e.g., the Pahsimeroi) is known to de-water channels but this is outside of the Forests' ability to affect. In some subbasins, there are known, local flow alterations from water withdrawals that do not generate an effect at the entire subbasin scale but locally affect flow patterns (e.g., the South Fork Salmon River and the Lower Middle Fork Salmon River).

**Table 7. Summary of Baseline Conditions by SWIE Matrix Pathway in Action Area Subbasins with Anadromous Fish.**

| Subbasin | HUC (4th Field) | SWIE Pathways | | | | |
|---|---|---|---|---|---|---|
| | | Watershed Conditions | Water Quality | Habitat Access | Channel Conditions/Dynamics | Flow/ Hydrology |
| Hells Canyon | 17060101 | FA | *FR* | *FR* | FA | FA |
| Upper Salmon | 17060201 | *FR* | *FR* | **FUR** | *FR* | *FR* |
| U. Middle Fork Salmon[1] | 17060205 | *FR* | *FR* | FA | *FR* | *FR* |
| L. Middle Fork Salmon[1] | 17060206 | *FR* | FA | FA | *FR* | *FR* |
| M. Salmon-Chamberlain | 17060207 | *FR* | *FR* | FA | *FR* | *FR* |
| South Fork Salmon | 17060208 | *FR* | *FR* | *FR* | *FR* | *FR* |
| Lower Salmon | 17060209 | *FR* | *FR* | FA | *FR* | *FR* |
| Little Salmon | 17060210 | *FR* | **FUR** | *FR* | *FR* | *FR* |

[1] Ratings are for non-wilderness portions of these subbasins only. The wilderness portions were all considered to be functioning appropriately.

Key FA- Functioning Appropriately; FR - Functioning at Risk; FUR - Functioning at Unacceptable Risk

*c. Environmental Baseline Summary*

Federal and non-Federal activities across the SWIE (forestry, agriculture, mining, etc.) have degraded, simplified and fragmented habitat over time, greatly reducing or eliminating historically accessible habitat. This is demonstrated by subbasin baseline conditions that are classified as functioning at risk across the SWIE. Classification of matrix pathways as functioning at risk suggests that essential habitat features of critical habitat (i.e., substrate, water quality/ quantity/temperature/velocity, cover/shelter, riparian vegetation, space, and safe passage conditions) are not adequately provided for across a wide range of habitat in the SWIE.

Since the habitat biological requirements of the listed species are not being met under the environmental baseline, baseline conditions in the action area would have to improve to meet those biological

requirements not presently met. Any further degradation or delay in improving of these conditions would increase the amount of risk the listed species presently face under the environmental baseline.

However, it should be noted that, salmonid populations are also substantially affected by variation in the freshwater and marine environments. Ocean conditions are a key factor in the productivity of Northwest salmonid populations, and they appear to have been in a low phase of the cycle for some time and therefore are probably an important contributor to the decline of many stocks. These species' survival and recovery depends on their ability to persist through periods of low natural survival due to ocean conditions and other conditions outside the action area. Therefore it is important to maintain or restore PFC to the various habitat conditions summarized in the Matrix Pathways in order to sustain the ESUs through periods of reduced survival outside the action area. Additional details about factors affecting the environmental baseline can be found in Federal Caucus (2000), NMFS (2000), and OPB (2000).

## B. Analysis of Effects of Proposed Action

Effects of the action are defined as: "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR 402.02). Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing essential habitat features of critical habitat. Indirect effects are defined in 50 CFR 402.02 as "those that are caused by the proposed action and are later in time, but still are reasonably certain to occur." They include the effects on listed species or critical habitat of future activities that are induced by the proposed action and that occur after the action is completed (USDI FWS and NMFS 1998). "Interrelated actions are those that are part of a larger action and depend on the larger action for their justification" (50 CFR 403.02). "Interdependent actions are those that have no independent utility apart from the action under consideration" (50 CFR 402.02).

### 1. Effects of Proposed Action

#### *a. Introduction*

In step 3 of NOAA Fisheries' jeopardy and adverse modification analysis, it evaluates the effects of proposed actions on listed species and seeks to answer the question of whether the species can be expected to survive with an adequate potential for recovery if those actions go forward. The action should not further damage impaired[5] habitat or retard the progress of impaired habitat toward PFC. However, because implementation of activities covered by the LRMPs requires additional layers of

[5] In this document, to "impair" habitat means to reduce habitat condition to the extent that it does not fully support long-term salmonid survival and therefore "impaired habitat" is that which does not perform that full support function.

environmental review to meet National Forest Management Act (NFMA), NEPA, and ESA requirements, LRMPs present a special case for analyzing the effects of actions. Since LRMPs establish direction that governs development and implementation of actions, direction that is not typically revisited at the project-level, NOAA Fisheries considers a "no jeopardy" plan as one that establishes sufficient direction to produce, with a high degree of consistency, actions that would not jeopardize listed species.

Even though LRMPs set important parameters for the authorization of specific projects, they typically do not provide the final authorization for project implementation. Therefore, this Opinion's analysis considers the potential effects of site-specific activities that may be taken consistent with the plans.

Although project-scale actions will still be subject to Section 7 consultation, NOAA Fisheries finds that it is appropriate to consider the efficacy of LRMP direction to minimize and avoid adverse effects at the earliest project planning level. The accumulation of effects at the landscape level from numerous actions, in the event they are not sufficiently minimized at the project-specific level, would reduce the likelihood of both survival and recovery of ESA-listed fish species. On the other hand, LRMP sideboards that result in management actions for the benefit of listed fish, emphasizing protection of aquatic and riparian areas with landscape-scale strategies for protecting the best remaining habitat and restoring damaged habitat, could allow for the survival and increasing prospects for recovery for listed fish species through improvements to aquatic habitat.

The Revised LRMPs were based on the latest scientific information, including: (1) attention to evaluating and retaining/adjusting interim aquatic direction (P/I and the LRMP Opinions); and, (2) use of ICBEMP science and comprehensive SWIE data sets on conditions, listed species, and their habitats to formulate the WARS database (used for restoration prioritization, MPC assignment, completion of environmental baseline, etc.).

The LRMP BA provides a detailed analysis of the effects of the proposed action and how it avoids and minimizes adverse effects on ESA-listed fish species and their critical habitat. The analysis used a modified NOAA Fisheries Matrix (SWIE Matrix) to evaluate elements of the proposed action that have the potential to affect the listed fish or their essential habitat features. Since the general effects of Forest Service land management activities on anadromous fish and their habitats have been well described in the literature and previous consultation efforts (Rhodes et al. 1994; Spence et al. 1996; NMFS 1995 and 1998), this Opinion will not provide a detailed review of each potential effect for each resource program.

The proposed action is intended to replace interim direction provided by P/I and the 1995/1998 LRMP Opinions, direction cumulatively considered by NOAA Fisheries to avoid jeopardy and conserve recovery options until long-term restoration strategies could be established (Federal Caucus 2000), NOAA Fisheries will evaluate how the proposed action provides for the various components of the long-term ACS (see Section B.2 of this Opinion). As outlined in the Northwest Forest Plan (FEMAT 1993), PACFISH (USDA Forest Service and USDI BLM 1995), and the Final Basinwide Salmon Recovery Strategy (NMFS 2002), ACS components have been a generally accepted structure to

ensure broad plan-level or multi-plan level direction conserves and protects listed species and their habitats (and through consultation, avoids jeopardy and adverse modification of critical habitat).

Taking this into consideration, incorporating components of an ACS was fundamental to development of the Revised LRMPs. Though LRMPs were not organized by ACS component, each of the eight ACS components was tracked by the Level 1 Team through development of the LRMPs.

This effects analysis will therefore examine each ACS component and the plan-level direction for that component, assessing the effectiveness of each component in directing project development so that risks to ESA-listed fish species and their habitats are avoided or minimized, and restoration efforts appropriately prioritized and implemented. Comparisons of the proposed "long-term" direction with the interim direction of P/I and the 1995/1998 LRMP Opinions, will be used to help evaluate the effectiveness of each component, as NOAA Fisheries has generally found the interim direction to be effective in meeting ACS requirements (NMFS 1998).

The ACS components will be discussed in this order: (1) Goals; (2) WCIs; (3) RCAs; (4) Priority Watersheds; (5) Multi-Scale Analysis; (6) Restoration/Prioritization; (7) Monitoring & Adaptive Management; and, (8) Activity-Specific Objectives, Standards and Guidelines. The discussion of objectives, standards, and guidelines will be the largest portion of the effects analysis, since that component provides the direction most relevant to avoiding and minimizing adverse effects on ESA-listed fish species at the plan-level. NOAA Fisheries will analyze proposed Forest-wide direction in comparison to interim direction, which were generally found to be similar. In some cases, the proposed direction is more restrictive than interim direction, while in other cases proposed direction was altered to allow more room for implementing a variety of ecosystem management tools including those that could have temporary or short-term adverse effects on listed species to achieve short- or long-term benefit.

Given the increased risk of producing projects that could have up to short-term adverse effects on ESA-listed fish species, NOAA Fisheries examines the expected level of activities within various MPCs, and where these occur in relation to ESA-listed fish species and their habitats. The analysis will evaluate the various levels of risk associated with various MPC assignments (differing activity allowances), and how expected levels of various activities (e.g. output projections, grazing management strategies, etc.) are expected to affect ESA-listed fish species and their habitats. Risk will be evaluated for individual subbasins, identifying particular areas of concern, such as where habitat for ESA-listed fish species, degraded environmental baseline, and direction that potentially allows for projects that could adversely affect salmon, steelhead and/or their habitat.

*b. Evaluation of ACS Components*

***Goals.*** In the Revised LRMPs, resource goals establish an expectation of the characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. Since the quality of these

aquatic features is intimately tied to the ecological function of upland and riparian areas, a series of goals founded on maintaining or restoring both riparian and upland habitat was developed for the Revised LRMPs. Similarly, P/I established eight riparian goals (page C-3), which emphasized the need to maintain and restore water quality, stream channel processes/ integrity, riparian vegetation, etc. Attachment 3 provides a detailed comparison of proposed and interim goals.

The emphasis of goals established under the proposed action is watershed conservation and restoration, an emphasis consistent with promoting survival and recovery of ESA-listed anadromous fish species. NOAA Fisheries finds that the proposed goals broadly outline the restoration and habitat needs of ESA-listed anadromous fish at the SWIE-scale, and also reflect the broad-scale needs described for these same species under PACFISH.

***Watershed Conditions Indicators.*** WCIs are a suite of habitat condition components (e.g. temperature, substrate condition, fine sediment percent, etc.) that represent "properly functioning" habitat objectives for salmon and steelhead. The WCIs are essentially identical to habitat parameters used in NOAA Fisheries matrix for salmon and steelhead (NMFS 1996), an analysis tool where matrix values have proven to be effective for many years during project-specific application. Use of WCIs is required through TEPC Standard 6, and SWRA Standards 1 and 4.

WCIs would be used both for project design in NEPA analysis (LRMP Appendix B, p. B-1) and for project-level Section 7 ESA consultation. The Forest Service interdisciplinary team would evaluate potential effects of the project on WCIs, modifying project design to incorporate changes that avoid or minimize adverse effects on ESA-listed fish species. By setting objectives for properly functioning habitat, WCIs also set the desired conditions around which restoration strategies would be developed.

NOAA Fisheries did consider that applying WCIs to projects involves an assessment of duration of effects, with "temporary" effects defined as three years or less, and "short-term" effects as 3-to 15-years. The durations of effect under temporary and short-term (as defined) can be substantial because they span freshwater rearing of at least three anadromous fish year classes and four generations of a particular year class. These definitions when used in application of WCIs in the SWIE Matrix can understate what are essentially long-term effects to the listed species. Duration of effect is just one element in evaluating effects of actions on WCI. As identified in the Section 7 Consultation Handbook (FWS and NMFS 1998), others include: (1) proximity of the action to the listed species or critical habitat; (2) species distribution in relation to the action; (3) timing of the action in relation to the species life cycle; (4) nature of the effect on the elements of the species life cycle; and (5) frequency, intensity, and severity of the disturbance. Specifically regarding the duration of effects and how they are applied to ESA-listed fish species, the handbook states:

> The effects of the proposed action on listed species or critical habitat depend largely on the duration of its effects. Three potential categories of effects are: (1) A short-term event whose effects are relaxed almost immediately (pulse effect); (2) A sustained, long-term, or chronic event whose effects are not relaxed (press effect); or (3) A permanent event that sets a new threshold for some feature of a species environment (threshold effect). For many species, a proposed action producing a single, short-term effect is less likely to jeopardize the continued existence of a

species than a long-term chronic event or the permanent alteration of a species habitat.

As defined in the SWIE Matrix, even a temporary effect that could last up to three years, and could be considered a long-term or press effect on listed fish species. Definitions for short- and long-term would always be considered press or threshold effects, effects more likely to result in jeopardy or adverse modification. Therefore, NOAA Fisheries finds that, when applying the SWIE Matrix at the project-level, it would generally not be appropriate to allow adverse effects on a listed fish species (through action-related reductions in water quality, streambank condition, etc.) that extended beyond even a seasonal time-frame (e.g. hours to days, or an in-water work window, etc.).

Appendix B (Forest LRMPs) does state that "In some cases, adverse effects to one WCI in the temporary or short-term *may be acceptable* in order to improve another WCI in the short- or long-term. The duration of an adverse effect that *may be allowed* in the temporary or short-term in order to improve another WCI and provide for long-term benefits will depend on site-specific conditions and resources of concern (LRMP Appendix B, p. B-3)." These statements better reflect the intent of SWRA Standard 4, suggesting that temporary and short-term effects need to be evaluated and weighed carefully in relation to the environmental baseline and status of the local fish populations/subpopulations before project-specific actions are authorized. Although the time periods defined in the Appendix B glossary allow for degradation of fish habitat for up to four life-cycles, NOAA Fisheries finds SWIE Matrix implementation guidance provides the necessary clarifications for applying SWRA Standard 4 during project-level implementation, and thereby identifying and minimizing effects on listed fish through project planning and implementation.

The Revised LRMPs also recognize that individual WCI values may need to be refined to more accurately reflect inherent characteristics of a particular watershed or subbasin, and have included a section explaining this process for WCI modification. Modification in watersheds with ESA-listed fish species would require coordination with NOAA Fisheries and the FWS during project-level Section 7 consultation (LRMP Appendix B, page B-11), ensuring that the changed values are consistent with listed fish habitat needs in those areas.

NOAA Fisheries expects that when properly implemented, WCIs would be employed in a manner that reduces risk to ESA-listed fish species and their habitat and does not anticipate that WCIs will contribute to adverse effects on these species. This determination is based on: (1) WCIs representing indicators of "properly functioning" salmonid habitat; (2) WCI levels can be adjusted locally to accurately reflect inherent site characteristics; and (3) WCIs would be used during both the NEPA planning/project design phase and project-level Section 7 consultation, an approach that is successfully being used in ESA consultation efforts to avoid and minimize potential adverse effects on ESA-listed fish species.

***Riparian Conservation Areas.*** The Revised LRMPs propose a system of RCAs to serve as a riparian reserve network. The approach outlined in the Revised LRMPs is similar to the interim direction provided under P/I (Attachment 4), but provides new direction regarding use of the site-specific analysis option (refer to Attachment 1). NOAA Fisheries evaluated each of the three options

proposed for delineating RCA widths, as summarized below.

**Option 1:** This option applies "default" widths of 300-feet for forested perennial streams and intermittent streams that provide seasonal spawning/rearing habitat, and 150-feet for other intermittent streams. These widths are equal to or greater than default values applied under the interim direction. The proposed widths are greater than interim widths for perennial streams (interim 150-feet for non-fish bearing streams versus proposed 300-feet for all forested perennial streams), some intermittent streams (interim 100-feet versus proposed 150- or 300-feet), and include rangeland intermittent streams whereas interim direction did not. Because these proposed widths are technically supported (FEMAT 1993; Naiman et al. 2000), and similar to those interim widths that have applied consistently on the SWIE Forests, NOAA Fisheries expects this option to be effective in delineating RCAs that provide riparian and stream functions.

**Option 2:** This option generally applies "default" site-potential tree heights (Attachment 5) and floodprone widths. Literature indicates that use of site-potential tree heights is sufficient for protection of a variety of riparian functions and ecological processes. One site potential tree height has been shown to provide for stream shading, large woody debris recruitment, fine organic litter input, root strength for bank stabilization, retention of soil moisture, and reduction of solar radiation. Two site-potential tree heights generally provide for microclimate functions and filtration of sediments, nutrients, and pollutants ( FEMAT 1993; Spence et al.1996; Quigley and Arbelbide 1997; NMFS 1995a; Naiman et al. 2000). Site potential tree heights vary by Forest and forest types, ranging from 70 feet in lodgepole pine PVGs to 130 feet cool moist grand fir PVGs. Consequently, this option will tend to produce narrower RCAs than under option 1. Based on the literature, however, and site potential trees of at least 70 feet, NOAA Fisheries expects that RCAs delineated under this option will provide the majority of functions essential for maintaining fish habitat.

This option also allows for use of floodprone widths, which as defined by Rosgen (1996) generally include the active floodplain and low terrace, and correspond to an elevation typically associated with a 50-year flood event. Because floodprone widths will vary greatly (i.e., narrower in confined/entrenched streams, wider in broad valley forms/less entrenched streams), NOAA Fisheries considered the potential that floodprone width, where valley forms are confined, may define too narrow an RCA to provide for all riparian functions and processes. For forested streams, inclusion of "whichever is greatest" when considering the use of floodprone width or site potential tree heights, should ensure RCA widths encompass riparian functions, as noted above. For non-forested streams, it is less clear how well riparian functions would be encompassed under this option, since RCA width is determined by floodprone width or the extent of riparian vegetation, whichever is greatest.

The effectiveness of using floodprone width to protect all riparian functions and processes is not well documented in the literature at this time. NOAA Fisheries expects that the range of distances from the stream channel that floodprone widths encompass will generally provide adequate protection of riparian functions and processes such as stream shading, large woody debris recruitment, fine organic litter, bank stabilization, sediment filtration, and nutrient/dissolved materials filtration. However, literature is generally not available to confirm the ability of floodprone widths to provide for all functions and

processes, particularly microclimate and windthrow. Therefore, NOAA Fisheries concludes that use of floodprone width may not be appropriate for use in all channel types/valley forms.

**Option 3:** The third option would allow the Forest Service to delineate the RCA based on a site-specific analysis by a qualified specialist with expertise in the field of riparian function and ecological processes. Relevant riparian functions and processes and scientific literature sources to be consulted in site-specific RCA delineations are noted in Appendix B (p. B-37). NOAA Fisheries finds that, although the use of site-specific delineations is relatively untested in the SWIE, the delineation and documentation process is designed to be grounded in the literature on stream functions, and area specific information, and therefore should result in effective RCA widths for protecting fish habitat.

A notable addition to all options (default and site-specific), which is not part of interim direction, is incorporation of sediment delivery-distance modeling and increasing RCA widths where needed to avoid/minimize sediment delivery from outside the RCA to the stream. This element was added to RCA delineation because sediment delivery distances can vary greatly (based on geology and slope steepness, etc.), with travel distances often greater than default widths based on site-potential tree heights, floodprone width, etc. NOAA Fisheries expects this addition to the RCA delineation process should result in reduced sediment delivery (and thus reduced effects on salmon and steelhead habitat) from ground disturbing actions outside RCAs.

In summary, NOAA Fisheries finds most of the RCA width delineation options, especially with the addition of sediment delivery distance modeling and increased widths where needed for sediment filtering, are likely to result in RCAs that provide the necessary stream functions for listed fish. Use of floodprone width, however, has not been tested in this area, and may not provide the necessary protection of stream functions in all channel types/valley forms.

***Priority Watersheds/Multi-scale Analysis/Aquatic Restoration Prioritization.*** NOAA Fisheries considers three ACS components, priority watersheds, aquatic restoration, and multi-scale analysis as a group, because those aspects of the proposed action are tightly intertwined, with multi-scale analysis used to prioritize subwatersheds, and those priorities serving as focal points for aquatic restoration.

Although intertwined, a description of each ACS component is provided below to clarify how they are designed to function within the LRMPs, with reference to the roles of these components in influencing actions that affect listed salmon and steelhead. To analyze the effects of these components in a general way, NOAA Fisheries focuses on how well the proposed components incorporated the best available data on ESA-listed fish and habitat conditions within the SWIE. Particularly for the proposed priority watersheds and related direction, NOAA Fisheries also considered that: changes on the SWIE from the 1995/1998 LRMP Opinions Priority Watersheds network (which was developed at the ESU-scale) potentially change the function of Priority Watersheds as a whole in providing risk minimization and restoration priorities for ESA-listed fish in a coordinated, effective way at the ESU-scale.

*Multi-Scale Analysis* - NOAA Fisheries first considered how multi-scale analysis was used in the development of the LRMPs, and then considered how LRMPs were designed to continue to develop

and incorporate multi-scale information into project planning.

The development of the proposed LRMPs involved data analysis at multiple scales and appears to have incorporated the best available data. Forest Service' primary analytical tool was the WARS database, constructed from ICBEMP science team data layers with additions/revisions using watershed-specific data (e.g., actual, rather than predicted, road densities and fish distribution, etc.). Data analyses were similar to those conducted by ICBEMP scientists, incorporating, for example: species distribution and relative abundance, several watershed condition variables, and ratings of geomorphic integrity and watershed sensitivity to disturbance. Outputs of modeling using the WARS database were cross-checked and adjusted based on further area-specific information from Forest resource specialists. The analyses produced a set of draft 6$^{th}$ field HUC subwatershed priorities for restoration. NOAA Fisheries finds the outputs are indicative of a sound scientific analysis that used current information on listed salmon and steelhead and their habitat, as the pattern of watershed restoration priorities (further discussed below) is generally consistent with the NOAA Fisheries 1995/1998 Opinions Priority Watersheds and more recent information (e.g., section 7 watershed and project BAs) that has confirmed those priority areas for listed fish.

Regarding the continuing role multi-scale analysis would have in the LRMPs as they are implemented and projects are designed, however, NOAA Fisheries finds a notable absence of commitment in the LRMPs to further assessments and analyses at the subbasin and watershed scales in support of project development. Whereas watershed analysis and subbasin assessments and planning were required components of the interim direction and of the draft ICBEMP strategy, the proposed action does not require these.

For subbasin assessments, the Forest Service has described its intent to participate in the subbasin assessment/planning efforts conducted by other parties in the region through the following objective:

> *SWRA Objective 20* - As requested by the lead agency, coordinate data exchange and provide review/input into subbasin planning efforts undertaken by the State Office of Species Conservation, the NWPPC, Tribes, and local watershed advisory groups.

This is similar to Forest Service' broad commitment, which is part of the environmental baseline, to be involved in NWPPC subbasin planning (refer to the NMFS 2000 Basinwide Recovery Strategy), but may not be timely and specific enough to be an effective Forest Service management tool to ensure projects are designed to conserve and restore the most important habitats for listed fish.

For watershed analysis, it is not proposed as mandatory in any instance, but may be conducted at the discretion of the Forest Service. Certain activities, such as road construction in riparian areas, exceedence of 15% ECA in Priority Watersheds, etc., that required a watershed analysis under the interim direction would not require a watershed analysis under the proposed action. Those activities were deemed to involve certain risks of incremental degradation of watersheds (PACFISH, NOAA Fisheries 1995 LRMP Opinion), and it was assumed that watershed analysis, by providing thorough information and analysis, would result in better designed projects that more effectively avoided,

minimized, and mitigated impacts on ESA-listed fish and their habitat. The absence of watershed analysis as a mandatory step to inform projects with specific risks to listed fish is discussed further below (Standards and Guidelines section of this Analysis of Effects).

While the proposed actions may not result in additional or updated analyses at the subbasin and watershed scales, a May 20, 2003, Consultation Framework developed concurrently with the proposed action was designed to address these gaps in multi-scale analysis during the implementation of the LRMP (USDA et al 2003). The Framework entails development and updates of subbasin/watershed documents that describe conditions within the SWIE, analyzing limiting factors for listed species and other physical and biological components, and providing recommendations. The Framework is structured to provide the same sort of information that subbasin assessments and watershed analyses would provide, although stakeholders would not be involved in the Framework documents, and the amount of area covered (several subbasins containing many watersheds) indicates analyses done under the Framework will be less thorough than watershed analyses. NOAA Fisheries finds that the Framework can provide an analytical mechanism spanning the key scales related to project design, and can be tailored to focus on key fish habitat related issues (e.g., roads or ECA) within a watershed; however, this is a new and untested tool and its documents may not be available in most areas in the near term (discussed further below, in Effects Section subbasin summaries).

*Watershed Prioritization* - The Revised LRMPs adopt a watershed prioritization scheme that differs in scale, and how the priorities apply to projects, from the watershed prioritization in interim direction. Whereas interim Priority Watersheds and Special Emphasis Subbasins are mostly 5$^{th}$ and 4$^{th}$ field HUCs, the Revised LRMP assigns priority levels to each 6$^{th}$ field HUC subwatershed. Further, whereas the interim priority areas are both focal points of restoration and subject to additional specific standards to minimize risks from projects, the Revised LRMP's watershed priorities were largely designed to describe a "restoration/conservation emphasis" (active - high, moderate, or low; passive - high, moderate, or low; or conservation), and were used largely in assigning appropriate MPC designations. They do not, at this level, have specific standards to minimize risks of projects to listed fish as in interim direction. Considering the Revised LRMPs more specifically, there are two layers of watershed prioritization.

The first layer is the full set of subwatersheds each rated into one of the seven categories noted above. "Passive restoration" was assigned where subwatershed conditions were degraded, but the natural rate of recovery would be sufficient to achieve properly functioning stream conditions through changes in management direction and little or no investment of resources. "Active restoration" was proposed for degraded watersheds where natural rates of recovery were not deemed to be sufficient and would require assistance through deliberate mitigation. NOAA Fisheries finds that though the scales are different there is substantial consistency between interim and proposed direction in the location of high priority watersheds. That is, within each interim Priority Watershed, the vast majority of its 6$^{th}$ field HUCs in the proposed LRMPs were rated as high priority (with passive or active restoration emphasis). Again, however, these priorities do not have an accompanying set of special risk management requirements assigned at this level. Instead, the Forest Service either adopted or modified interim requirements for Priority Watersheds and Special Emphasis Subbasins, incorporating them into

Forest-wide or MA direction where appropriate (risks to listed fish related to LRMP-level standards and guidelines, and in context of subbasin specific information on projected activity levels is further discussed below).

The second layer is a smaller set of 45 "ACS priority" subwatersheds designed to be the focal points of aquatic restoration efforts for this LRMP planning period. The subset of ACS priority subwatersheds were identified as essentially the highest priority for restoration funds over the 10- to 15-year planning period, in an effort to make notable improvements in a few watersheds (rather than only minor improvements in many) that are the most restorable and where the potential benefit to listed fish is the greatest. These will be further discussed in the following section, titled "Aquatic Restoration."

In summary, the proposed action does not retain the interim designations of Priority Watersheds and Special Emphasis Subbasins. NOAA Fisheries finds the first layer of revised watershed priorities, while based on the best available data and well aligned with the most important habitats for listed anadromous fish, primarily creates the information context for projects rather than direction for avoiding and minimizing adverse effects on important habitats for listed fish at this level. The interim direction for Priority Watersheds (e.g., watershed analysis required prior to certain activities) and Special Emphasis Subbasins (e.g., road and other restrictions in the South and Middle Fork Salmon Rivers) were addressed to some extent in Standards and Guidelines and MA direction within subbasins (refer to latter portions of the Analysis of Effects, below). The second layer of watershed prioritization provides more focused priorities for aquatic restoration actions, and is further evaluated in the following section.

*Aquatic Restoration* - As noted above, 45 ACS priority subwatersheds were identified as focal areas of aquatic restoration for the duration of the LRMPs. These priorities can be adjusted based on new information, such as through biennial updates of the WARS database. NOAA Fisheries finds that the proposed ACS priority subwatersheds align well with existing anadromous fish populations that can gain increased survival rates through habitat improvements (e.g., several ACS priority subwatersheds in the Upper Salmon River subbasin). NOAA Fisheries understood through early consultation on the Revised LRMPs that restoration would be implemented in each of the ACS priority subwatersheds during this planning period. The objective addressing implementation of restoration, however, appears to set a lower base expectation for how widely aquatic restoration will be implemented. TEPC Objective 10 states:

> Over the planning period, initiate habitat restoration for at least two subpopulations of anadromous and two populations of resident fish in each subbasin where these species occur. Use the current WARS, or Forest Service approved portions of recovery plans, to assist in determining watershed priorities for habitat restoration within a subbasin.

The LRMP describes anadromous subpopulations in terms of a 6$^{th}$ field HUC or subwatershed. Therefore, with eight subbasins containing habitat for anadromous fish, and the objective to restore habitat for two subpopulations/subbasin, it appears that the minimum restoration may be accomplished in less than half (16 of 45) of the ACS priority subwatersheds during the life of the plan.

Under the NMFS 2000 Basinwide Salmon Recovery Strategy that is part of the environmental

baseline, the Forest Service made a broad commitment to accelerate restoration on Federal lands it administers. Implementation of restoration has been and likely will continue to be highly dependent on annual Forest budgets, and thus not generally predictable. Recent information indicates that at the Basin-scale, Forest Service has not been able to accomplish the aquatic restoration that was envisioned (USDA Forest Service 2003f). Pooling of funding within and between Forests and other agencies offers a mechanism to maximize the restoration on the ground. The proposed actions set this objective related to funding:

> *SWRA Objective 19* - Identify and capitalize on funding opportunities to assist in the restoration of aquatic habitat and watershed conditions important to the recovery of listed fish species and de-listing of 303(d) impaired waterbodies. Examples of potential funding sources include the State Clean Water Act 319 Funds, Federal Columbia River Power System Re-licensing funds, and funds from the NPPC, public and private partnerships.

This objective does identify sources of funds; however, the LRMPs do not include expectations or processes for pooling of funds across districts and Forests to maximize restoration of fish habitat within budget limits.

In summary, NOAA Fisheries finds the ACS priorities are well aligned with habitat improvement needs for listed salmon and steelhead. The implementation, however, appears to be less aggressive than may be needed for the identified ACS priority subwatersheds, and mechanisms are not proposed to ensure efficiency and coordination of funding and projects across administrative boundaries to maximize instream improvements for listed fish.

***Monitoring and Adaptive Management.*** As with interim direction, monitoring in the Revised LRMPs includes assessing if projects designed under the LRMPs are effective in protecting and restoring habitat for listed species. Monitoring is especially important under the Revised LRMPs as they involve a substantial amount of new direction, the effectiveness of which is untested. The primary monitoring strategy being proposed by the Forest Service for Revised LRMPs is the Local Unit Criteria and Indicator Development (LUCID) monitoring process. LUCID is a broad monitoring framework currently in use nationally by the Forest Service. In addition, to remain consistent with Regional monitoring efforts, the proposed action has incorporated the commitment to continue implementation of the regional IIT monitoring strategy currently applied across the range of P/I.

To address adaptive management, the Forest Service has proposed the CAP as part of the monitoring effort, updating plan direction on a biennial basis. This process should help ensure that monitoring occurs and its results are used to update WARS database and Consultation Framework documents on a regular basis. CAP is intended to keep plans current and puts into place both procedures and an organization to conduct assessments to aid in determining the need for LRMP amendment and revisions prior to the scheduled 15-year update.

NOAA Fisheries finds the monitoring and adaptive management approaches generally well formulated. Continuance of the IIT monitoring in particular is expected to provide consistency in implementation and valuable information on the effectiveness of management actions in protecting riparian areas and

streams. The IIT monitoring, though relatively recent (full implementation of grazing module in 2000, and other modules developed subsequently) has yielded useful, action-specific information, particularly on the implementation and effectiveness of grazing strategies in maintaining, and not hindering recovery of riparian and stream functions.

The proposed monitoring/adaptive management approach does, however, only commit to continued implementation of the IIT monitoring effort, but not specifically to the more general role of the IIT (or similar Regional-level group) as an implementation oversight body. IIT oversight at the Regional, ESU-scale has produced many interagency field reviews and other broad efforts, such as the Roads Analysis/data layers and Unroaded Areas Report (IIT Road Density Analysis Task Team 2002), that have helped frame management issues and increased the information base and consistency among management units in developing projects that consider the full range of effects on listed fish and their habitat. Although the SWIE would be operating under different specific direction than surrounding management units, the basic objectives of protecting and restoring important habitats for ESA-listed fish species are the same. Without benefit of a broader implementation structure such as IIT, the SWIE may not contribute to and benefit from all the information developed within the range of the Snake River salmon and steelhead, and thus may not link well with evolving information on the status and broad needs of Snake River salmon and steelhead ESUs.

***Standards and Guidelines.*** The Revised LRMPs establish a hierarchy of direction designed to avoid or minimize adverse effects on ESA-listed species, while maintaining and restoring properly functioning fish habitat conditions (WCIs). As noted above (see Section 1.D, Assumptions), NOAA Fisheries has found that the combination of standards established under interim direction generally resulted in projects that avoided/minimized adverse effects on ESA-listed fish species and their habitat. Therefore, NOAA Fisheries assumes that by continuing to apply a similar suite of standards and guidelines, progress toward conservation and recovery of ESA-listed fish species and their habitats would continue. For this ACS component, NOAA Fisheries first examines standards and guidelines that are broadly applied (Forest-wide, RCA, and landslide-prone) and then evaluates activity-specific standards and guidelines.

*Forest-wide Direction* - TEPC Standard 6, and SWRA Standards 1 and 4 provide overarching direction to all resource programs in the plans. These standards require actions be designed to avoid or minimize adverse effects on ESA-listed species (TEPC Standard 6), to maintain or restore water quality (SWRA Standard 1), and to not degrade or retard attainment of properly functioning stream conditions (SWRA Standard 4). These general standards are similar to interim direction; and NOAA Fisheries expects the direction to be effective in many cases, as interim direction has been, in ensuring projects avoid and minimize adverse effects on listed species and their habitat. NOAA Fisheries notes, however, these standards do allow for activities that adversely affect listed fish, particularly in these three ways: (1) actions may have temporary or short-term adverse effects on fish habitat as long as these are outweighed by demonstrable benefits to fish habitat over the long-term; (2) exceptions are allowed to SWRA Standards 1 and 4 where Forest Service authorities are limited; and (3) the term "maintain is defined to include reduction in habitat condition as long as the condition remains in the functioning appropriately range as defined by the SWIE Matrix. NOAA Fisheries thus finds that these overarching standards place added burden on project-level Section 7 consultation (compared to interim

direction) to ensure projects avoid/minimize adverse effects. Each of the three "allowances" and potential effects on fish is discussed briefly below.

First, allowance of actions that reduce habitat conditions in the temporary (LRMP defines as up to 3 years) or short-term (3-15 years) may result in increased numbers of projects that are likely to adversely affect listed fish compared to what has occurred under interim direction. The durations of effect under temporary and short-term (as defined) can be substantial because they span freshwater rearing of at least three anadromous fish year classes and up to four generations of a particular year class. Notably, the action documentation would still need to "demonstrate" that these potentially substantial temporary or short-term adverse effects are outweighed by greater, long-term benefits to the species and its habitat. Estimates of long-term results will, however, tend to have a large range of error, with results producing less benefit than projected in some or many cases. Projects such as road obliteration that are designed primarily for aquatic restoration will readily meet the standards when implemented. Projects that build road to allow thinning of trees to reduce the risk of uncharacteristic wildfire, however, may produce the adverse effects related to the road construction, but less benefit than projected. Studies show relatively little lingering effect of large wildfires on populations of highly mobile species such as anadromous fish (Rieman et al. 1995;Rieman and Clayton 1997; Gresswell 1997; Burton 2000). The overarching standards thus put the onus on project level planning and consultation to allow risks to listed fish, based on benefits that are very difficult to project accurately and that can be overestimated.

Second, allowance of adverse effects on listed fish habitat where Forest Service authorities are limited highlights but does not resolve a problem NOAA Fisheries has found in certain types of project level consultations: Forest Service authorities related to permits of water conveyance, hydroelectric projects and mines are often not clear to project planners and NOAA Fisheries. Where authorities for these actions actually exceed what is assumed in project-level planning, the conservation measures applied fall short of what is available to avoid and minimize adverse effects on listed fish and their habitat.

Third, the overarching standards (and various other objectives, standards and guidelines) allow for degradation of high quality habitat in the way the word "maintain" is defined. Activities that reduce habitat condition within the "functioning appropriately" category in the SWIE Matrix are considered to "maintain" resource objectives. For example, an action that reduces streambank stability from 99% to 91% meets the "maintain" standards, because streambank stability remains in the "functioning appropriately" category (>90%). Decreasing habitat conditions, within the "functioning appropriately" category increases the likelihood that natural or anthropogenic disturbances will perturb conditions out of proper function. This allowance also contrasts with the anti-degradation approach of interim direction (refer to PACFISH, page C-4), and allows actions that are not in keeping with a basic premise of aquatic conservation to protect the highest quality habitats and restore and reconnect adjacent areas (FEMAT 1993; Quigley and Arbelbide 1997). The definition thus places the onus on project-level consultation to determine if reductions in high quality habitat would not sufficiently avoid or minimize adverse effects on listed species and their habitat.

*RCAs* - The proposed action is similar to interim direction in placing limitations on activities (such as

road construction, timber harvest, facility construction/relocation, and fuel storage/refueling) that have the potential to reduce riparian area and stream function. Attachment 6, Tables 1and 2 provide example comparisons of proposed and interim direction for Lands & Special Uses, Riparian Area, Timber, and Grazing Management. Exceptions have been written into various RCA standards to provide for restoration of riparian vegetation and aquatic functions, and to allow for actions to increase safety to human life or protect existing structures. Based primarily on experience with numerous consultations on actions involving management activities in riparian areas, NOAA Fisheries expects the proposed standards and guidelines generally will result in actions that maintain and restore riparian functions. The noted exceptions may, however, result in temporary or permanent reductions to those functions, especially from fire suppression activities and vegetation removal to protect structures from wildfire. Direction for fire-related activities is discussed further under activity-specific standards and guidelines (below).

*Landslide-Prone Areas* - The Revised LRMPs propose a step-down implementation process of categorizing landslide-prone areas, with a coarse-filter modeling, followed by fine-filter field sub-sampling to better predict the location and extent of landslide-prone areas. The proposed coarse-filter model has been demonstrated to accurately delineate the pattern of landsliding in British Columbia (Pack et al. 1997), and appears to be similarly grounded in scientific data as the approach used for Special Emphasis subbasins in interim direction (Prellwitz 1994; Hall et. al 1994). Fine-filter verification would reclassify the modeled slope stability hazard ratings for a given area based on field data samples, and would assist in development of management practices appropriate for the site that do not increase the inherent instability of these areas. SWRA Standard 12, and Guidelines 3 and 4 direct how projects would be designed to avoid increased risk of landslides from these areas.

NOAA Fisheries expects the direction for landslide-prone areas will be effective to avoid or minimize adverse effects on ESA-listed fish species and their habitats, because the proposed approach: (1) applies a peer-reviewed model with a 90% probability of predicting landslides; (2) applies fine-scale field verification of a representative sample of coarse-scale model results; and (3) applies limitations to or eliminates ground-disturbing management actions on higher risk landslide-prone areas. The proposed effectiveness monitoring of management in landslide-prone areas will be an important tool for determining if this new approach adequately protects listed fish and their habitat (primarily from action-induced mass wasting that delivers sediment to streams). Stratification of monitoring by hazard risk class is not proposed, but has been identified by NOAA Fisheries as a way to increase the resolution of the monitoring, and thereby better identify needed adjustments in future management activities to meet the standards and guidelines.

*Activity-Specific Direction* - Along with the broadly-applied standards and guidelines discussed above there are numerous other activity-specific standards and guidelines for timber, roads & facilities, grazing, recreation, minerals, etc. NOAA Fisheries evaluated these based primarily on substantial experience with project-level consultation on the SWIE Forests. NOAA Fisheries finds that, the standards and guidelines are thorough in addressing (though not always fully minimizing) the risks to listed fish from specific activities that have been identified in project consultations.

For some activities, such as mining, the proposed direction adopts large portions of interim direction. Application of this direction has reduced some but not all of the adverse effects on listed fish from mining projects, with much of the work left to project consultation; and that is expected to continue under the Revised LRMPs. For other activities, such as road construction, maintenance, and reconstruction, the proposed direction relies heavily on the Forest Service Manuals and Handbook, rather than summarizing Best Management Practices (BMP) as P/I did. While the BMPs in FSM and FSH direction appear to be complete in terms of identifying methods to, for instance, reduce sediment delivery to streams, these BMPs may be changed without section 7 consultation. Also, construction of new roads in riparian areas does not require a watershed analysis; therefore this activity may be more frequent and less well-informed and mitigated than under interim direction.
Considering the whole suite of activity-specific standards and guidelines, NOAA Fisheries finds the majority of the direction will likely be effective in avoiding and minimizing adverse effects on listed fish. The Forest Service ACS Crosswalk displays a compilation of the direction by activity, and helps highlight what NOAA Fisheries identified as three ways in which the proposed direction commonly departs from interim direction that has been effective on the SWIE Forests. NOAA Fisheries considered the following "patterns" in the Revised LRMPs based on consultation experience with effective and not fully effective direction for listed fish at the plan level: (1) watershed analysis is not a prerequisite for activities such as new roads and facilities in riparian areas, actions increasing ECA above 15%, etc.; (2) direction that NOAA Fisheries considers appropriate for a mandatory requirement, such as upgrading existing stream crossings for fish passage/flood flows, and the road construction BMPs, is provided through non-mandatory objectives, guidelines, and/or manual and handbook guidance; and (3) exceptions within standards for fire management allow ground disturbance that can adversely affect listed fish. Each of these is discussed below.

First, the absence of "triggers" for watershed analysis in the LRMPs can lead to an increased frequency of, and less well-informed and designed implementation of activities such as road construction and timber salvage in riparian areas, than under interim direction. Each of the several interim triggers was identified because of the risk of the activity to stream functions for listed fish. The BA describes how some of these specific risks would be addressed. For instance, Forest Service policy direction requires a "Roads Analysis" for any proposed road construction. As another example, the BA noted 15% ECA is identified in the SWIE Matrix as the upper end of the "functioning appropriately" (re: peak flow), and therefore increases in ECA above 15% would be highlighted and analyzed in project design and consultation. It was also noted that modification of WCIs (interim direction RMO modifications in Priority Watersheds trigger watershed analysis) for watersheds with salmon and steelhead would require review by NOAA Fisheries.

Those partial approaches to some of the interim watershed analysis triggers, and the absence of additional information requirements for others such as "likely to adversely affect" mines, and new recreation facilities or timber salvage in RCAs, lead NOAA Fisheries to consider if the Consultation Framework would provide watershed analysis-like information for each of those activities. As noted above (discussion of multi-scale analysis), NOAA Fisheries finds that the Consultation Framework is constructed to provide a comparable type of information, though likely less thorough for a given watershed than watershed analysis. NOAA Fisheries in this

Opinion assumes the Consultation Framework will be implemented to fill the risk management and other roles of watershed analysis; however, this information likely will not be available for a given watershed during the first few years of implementation of the Revised LRMPs. In the analysis of specific subbasin direction and projected activity type/level (below), NOAA Fisheries further evaluates where risks, such as projects proposing ECA increases above 15% in important watersheds for listed fish, will likely arise most frequently.

Second, regarding replacement of several interim standards with guidelines, objectives, or FSM/FSH direction that is subject to change, NOAA Fisheries finds these other types of proposed direction generally are designed to be effective in ensuring actions protect and restore streams; however, their implementation may be less consistent than if they were standards. Direction for roads and fire management illustrate that point (refer to Attachment 6, Table 3 for detail). Regarding guidelines, an interim standard requiring establishment of a rehabilitation team for fire-damaged riparian areas (PACFISH FM-5) would be replaced by a guideline. The Revised LRMPs describe that guidelines will be implemented, unless specific rationale is provided that justifies an exception. The exceptions and rationale are not, however, subject to interagency review. Similarly, FSM and FSH direction (subject to change without NOAA Fisheries review) for road construction would be used in lieu of interim standards (PACFISH RF-2a-f.). Regarding objectives, interim requirements to close and stabilize unstable roads and repair stream crossings that block fish (PACFISH RF-3c. and RF-4) would be replaced with objectives to identify, prioritize, and implement those repairs. Those objectives do describe what has actually occurred under interim direction: implementation of standards for road repairs has been incomplete due to funding limitations, though repair priorities generally have been based on importance for listed fish. In summary, NOAA Fisheries envisions potential for inconsistent application primarily of guidelines and FSM/FSH direction that replace interim standards. Interagency involvement in exceptions to guidelines and changes in manual and handbook BMPs is not proposed, though it could increase consistency in ensuring projects protect and restore important habitat for listed fish.

Third, several proposed fire management standards (e.g., Standards 1, 2, and 3) involve exceptions related to public safety and defense of property that allow actions that can adversely affect listed fish and their habitat. NOAA Fisheries finds that, while these exceptions are necessary, tools to minimize the effects on streams and listed fish may not be in place early in the implementation of the LRMPs. For example, operational resources (e.g., direction on application of chemical retardants, and maps of base camp and water dipping areas that minimize effects on streams with listed fish) would be developed within one year post-ROD. Existing Fire Management Plans currently in place on the Boise and Payette National Forests can be used to provide this function until the operational guidance is completed. The Sawtooth National Forest, however, does not have this type of guidance in place; therefore, fire suppression activities on that Forest during the first year post-ROD can have increased risk of adversely affecting listed fish and their habitat.

*Standards and Guidelines, Effects Summary* - Based primarily on project-level consultation experience with the SWIE Forests, NOAA Fisheries finds that the proposed standards and guidelines, while addressing the various potential sources of adverse effects on listed fish and their habitat, do not

entirely ensure adverse effects will be avoided and minimized in projects designed under the LRMPs. Broad direction, for instance, in effect relies on project-level consultation to determine if: (1) long-term benefits demonstrably outweigh short-term adverse effects: (2) existing authorities are fully applied to avoid/minimize effects from mining, water conveyance, and hydropower actions; and (3) reductions in habitat conditions within the "functioning appropriately" range maintain protection of core habitats for listed species (e.g., protection from additional perturbations). The effectiveness of RCA and landslide-prone area direction does depend on monitoring and adjustments, but that direction generally seems well designed to avoid/minimize adverse effects on listed species. Replacement of some interim standards (particularly for roads and fire management) with guidelines or FSM/FSH direction, however, can result in less consistent application of measures that protect listed fish and their habitat. Finally, potential adverse effects from fire management (exceptions related to safety and property), pending development of operational guides, can be minimized with the use of existing operational guides; however, existing operational guides are not in place on the Sawtooth National Forest.

***MA and MPC Direction*** - Given that Forest-wide direction allows for some activities that could adversely affect listed salmon and steelhead and their habitat as noted above, NOAA Fisheries evaluates area-specific (MA/MPC) direction and Forest Service projections of activity levels that would occur under the Revised LRMPs. Each subbasin contains area-specific direction applicable to the entire MA, but also area-specific direction based on the management emphasis of the MPC assigned (see Attachment 7). What follows is a summary of area-specific direction, and how well this direction works to avoid or minimize adverse effects to listed fish species in relation to: (1) types of activities allowed in each subbasin, and (2) projected levels of activities expected to occur in each subbasin.

*Patterns of Ground-disturbing Activities Allowed: MPC Risk Levels* - MPCs vary in terms of the level of protective direction they provide for ESA-listed fish species and their habitat. For example, MPCs that contribute to the suited timber base, provide direction that allows for higher levels of ground disturbing activities (i.e., timber harvest, road construction, etc.), and consequently pose a higher risk of adverse effects to listed fish species and their habitat from ground-disturbing activities that affect streams. Based on the management emphasis provided by each MPC assignment, the types/patterns of activities allowed under that MPC, and the varying levels of protective direction provided for ESA-listed fish species and their habitat under those MPCs, NOAA Fisheries has grouped each MPC into one of three general levels of risk to listed fish species and their habitat (MPC "risk" level; see Table 9).

**Table 9. MPC Designation Grouped by Risk of Adverse Effect to ESA-listed Anadromous Fish Species and Fish Habitat.**

| Risk to ESA-listed Fish Species and Habitat | MPC Designation |
|---|---|
| Low | 1.1 - Existing Wilderness |
| | 1.2 - Recommended Wilderness |
| | 2.1 - Wild & Scenic Rivers |
| | 3.1 - Passive Restoration & Maintenance Aquatic, Terrestrial and Hydrologic Resources |
| | 4.1a - Undeveloped Recreation: Maintain Inventoried Roadless Character |
| | 4.1c - Undeveloped Recreation: Maintain Unroaded Character w/ Allowance for Restoration Activities (Inside Inventoried Roadless Areas [IRAs]) |
| Moderate | 2.2 - Research Natural Areas |
| | 3.2 - Active Restoration & Maintenance Aquatic, Terrestrial and Hydrologic Resources |
| | 4.1c - Undeveloped Recreation: Maintain Unroaded Character with Allowance for Restoration Activities (Outside IRAs) |
| High | 4.2 - Roaded Recreation |
| | 5.1 - Restoration and Maintenance Emphasis w/in Forested Landscapes |
| | 5.2 - Commodity Production Emphasis w/in Forested Landscapes |
| | 6.1 - Restoration and Maintenance Emphasis w/in Shrubland and Grassland Landscapes. |

"Low risk" MPCs have a conservation or passive restoration theme, do not contain suited timber base, have the greatest restrictions of the MPCs on road construction/reconstruction, and allow prescribed fire only for fuel treatment activities (instead of mechanical vegetation management actions). "Moderate risk" MPCs have an active restoration theme, also do not contain suited timber base, but generally include less restrictive road construction/reconstruction limitations, and an option to use mechanical vegetation treatments in addition to prescribed fire to achieve fuels reduction, etc. "High risk" MPCs allow more aggressive active restoration or commodity production, contain suited timber base, have the fewest restrictions on road construction/ reconstruction, and provide the ability to use the full range of mechanical and prescribed vegetation treatments and suppression strategies. An example of how direction varies between low, medium, and high risk MPCs for road construction/reconstruction is provided below.

*Low Risk style MPC Standard* - Road construction and reconstruction may only occur where needed: (a) To provide access related to reserved or outstanding rights; or (b) To respond to statute or treaty; *and for MPC 3.1* c) To address immediate response situations where, if the action is not taken, unacceptable impacts to hydrologic, aquatic, riparian or terrestrial resources, or health and safety, would result.

*Moderate Risk MPC Road Standard* - For MPC 3.2, same as above low risk standard, but includes one more allowance: To support aquatic, terrestrial, and watershed restoration activities.

*High Risk style MPC Guideline* (vs. Standard in low and moderate) - For MPCs 5.1 and 6.1, road construction and reconstruction may occur where needed: (a) To provide access related to reserved or outstanding rights; or (b) To respond to statute or treaty; or ©) To achieve restoration and maintenance objectives for vegetation, water quality, aquatic habitat, or terrestrial habitat; or (d) To support management actions taken to reduce wildfire risks in wildland-urban interface areas; or (e) To meet access and travel management objectives.

Similar trends of increasing allowances (from low to high risk MPCs) for mechanical vegetation treatment are summarized in Attachment 8.

Low, moderate, and high risk MPCs also differ in terms of the duration that activities are allowed to degrade fish habitat (see discussion of duration in WCIs, Section B.1.b. of this Opinion). For example, the Standard for MPC 3.1 (low risk), allows management actions, to only degrade habitat conditions in the temporary (up to 3 years), avoiding degradation in the short (3-15 years) and long-term (>15 years); whereas the MPC 3.2 (moderate risk) allows management activities to avoid habitat degradation only in the long-term. This extension, allowing for longer durations of management-related effects to listed fish species and their habitats, directs a higher risk where these MPCs have been applied. These MPC standards were drafted to allow the Forest Service more flexibility to plan and implement restoration projects where needed, allowing up to short-term effects where the WARS database showed that active restoration was more appropriate. However, as determined above, SWIE Matrix implementation guidance is expected to provide the necessary clarifications for applying SWRA Standard 4 during project-level implementation.

This considered, NOAA Fisheries finds that restrictive direction provided by low risk MPCs, when applied at the project-level, will result in projects consistently designed to avoid or minimize adverse effects to listed fish species and their habitat. Allowable activities in moderate risk MPCs also are expected avoid and minimize adverse effects in most instances, though NOAA Fisheries moderate risk MPCs have been further examined below where subbasins are anticipated to have higher levels of activity (e.g., in Upper Salmon River subbasin). High risk MPCs, with a higher likelihood of ground-disturbing activities, and a corresponding higher likelihood of resulting in adverse effects on listed fish species where more prevalent, are the focus of NOAA Fisheries analysis of effects of LRMP direction on subbasins (below).

Table 10 was developed to demonstrate where high risk MPCs are more prevalent in relation to ESA-listed anadromous fish species, summarizing the percentage of low, moderate, and high risk MPCs by anadromous fish-bearing subbasin, highlighting subbasins where increased levels of ground disturbance are most likely to occur.

**Table 10. Percentage of Subbasins Managed on Southwest Idaho Ecogroup by Assigned MPC Risk Category (subbasins occupied by anadromous fish only)**

| Subbasin | % of Subbasin w/in SWIE | % MPC Risk Category* | | |
|---|---|---|---|---|
| | | Low | Moderate | High |
| Hells Canyon | 5 | 94 | 0 | 6 |
| Little Salmon R. | 47 | 61 | 3 | **37** |
| Lower M. Fk. Salmon | 33 | 93 | 8 | 0 |
| Lower Salmon | 11 | 89 | 0 | **12** |
| M. Salmon-Chamberlain | 40 | 89 | 5 | 6 |
| S. Fk. Salmon R. | 98 | 66 | **31** | 4 |
| Upper M. Fk. Salmon | 20 | 82 | 18 | 0 |
| Upper Salmon | 35 | 58 | **41** | <1 |

* Low Risk - MPCs 1.1, 1.2, 2.1, 2.2, 3.1, 4.1a. 4.1c (inside IRAs); Moderate Risk - MPCs 3.2, 4.1c (outside IRAs); High Risk - MPCs 4.2, 5.1, 5.2, 6.1

*Projected Activity Levels and Types from Forest Service Modeling* - In addition to describing an expected level of risk to listed fish species and their habitat, MPC assignments also imply certain levels of activity for various land management activities. However, other than objectives broadly setting allowable sale quantity (ASQ) targets by Forest (see Table 11), specific information on the extent, location, and duration of individual projects was not available at this scale of the analysis.

**Table 11. Proposed Objectives for Timberland Activities by SWIE National Forest (Timberland Objectives 1 - 3)**

| LRMP Objectives | Payette N.F. | Boise N.F. | Sawtooth N.F. |
|---|---|---|---|
| Annual Harvest (acres) | 5,500 | 10,000 | 2,000 |
| Reforestation (acres) | 1,500 | 2,000 | 480 |
| Stand Improvement (acres) | 3,000 | 10,000 | 300 |
| ASQ (million board ft./decade) | 325 | 450 | 60 |
| TSPQ[1] (million board ft./decade) | 405 | 667 | 129 |

[1] TSPQ includes ASQ and wood products (e.g., fuelwood, posts, poles, houselogs, etc.) generated from vegetation treatment activities on both suited and not suited timberlands.

Instead, the Forest Service used MPC assignments and other information to more generally predict

where levels of certain land management activities were most likely to take place, forecasting where those activities are most likely to affect the environmental baseline and listed fish species. The BA found that even after applying all Forest-wide and MA/MPC direction, MPCs with active management themes had a higher potential for temporary and short-term effects to listed fish species and their habitat, citing the following reasons: (1) as more active treatments are applied, more protective measures may be needed to avoid or minimize potential effects. As more protective measures are applied, the risk that those measures would not be properly implemented increases; and (2) the more management activities applied to a specific location, the more the risk there is of effects occurring from those management disturbances, regardless of mitigation measures.

The LRMP BA (p. VI-158) evaluated risk to listed fish species and their habitat associated with modeled or expected increases in levels of activity at the subbasin scale. To better determine where higher levels of management activities would be most likely to occur in relation to listed fish species, a general level of risk was assigned for each subbasin based on the level of activity expected to occur under varying MPC assignments (Table 12). Each of the major headings used in Table 12 will be briefly discussed following the table, describing briefly how risk was predicted or modeled for each (explained in detail in Attachment 9). The effects analysis will conclude by considering how these modeled/predicted activity levels are expected to affect the environmental baseline and ESA-listed fish species within individual subbasins.

**Table 12. Forest Service Predicted Level of Risk to ESA-listed Anadromous Fish Species and Their Habitat Associated with Predicted or Modeled High Activity Levels.**

| Subbasins | Level of Risk Associated with High Activity Levels | | | | | |
|---|---|---|---|---|---|---|
| | Range | Ground Disturbing Activities (TOC[1]) | Risk of FM Treatment in Fish Strongholds | Risk of Noxious Weed Treatment | Recreation | Minerals |
| Hells Canyon | L | L | N/A | L | L | L |
| Little Salmon R. | **H** | L | **H** | **H** | M | L |
| Lower M. Fk. Salmon | L | L | N/A | L | M | **H** |
| Lower Salmon | L | L | N/A | L | M | L |
| M. Salmon-Chamberlain | L | L | N/A | L | M | **H** |
| S. Fk. Salmon R. | L | L | **H** | L | **H** | **H** |
| Upper M. Fk. Salmon | L | L | N/A | L | L | L |
| Upper Salmon | L | **H** | N/A | L | **H** | L |

[1]TOC - Threshold of concern (see below)

[2] FM - Fire Management or Fuels Reduction

The Threshold of Concern[6] (TOC) prediction was used to arrive at an overall prediction of the amount of ground disturbance that could be expected to occur within a given subbasin (see Attachment 9 for a detailed discussion of TOC). This model, combined projected levels of timber harvest, fuels management, and facility and road development across each subbasin in terms of Equivalent Replacement Treatment (ERT) acres, a measure that can be directly related to ECA as used in the SWIE Matrix. In general, when the predicted level of activity exceeded a TOC of 100%, ECA values were likely to reach levels that were deemed more likely to result in

[6] The TOC value is the result of a Cumulative Watershed Effects Model (CWE) adapted from Menning et al. (1996) to predict how projected levels of vegetation treatment, fuels management, and facility and road development combine to influence each subbasin in terms of Equivalent Replacement Treatment (ERT) acres, the disturbance associated with an acre of mechanically harvested clearcut. Depending upon criteria such as the presence of listed species, ERT classes, which can be equated to percent ECA, were used to establish each subbasins relative vulnerability. This ERT value was in turn used to represent the TOC, where a value >100% equaled the threshold at which the recommended ERT value would be exceeded and the potential risk of adverse effects on listed species could be expected (See detailed discussion of model beginning Page VI-159 of LRMP BA).

adverse effects on ESA-listed fish species and their habitat. The Upper Salmon River subbasin was the only subbasin where modeled TOC values exceeded 100%, based on the amount of fuels management activities expected to occur in this subbasin over the life of the LRMP.

Although the amount of ground disturbance from fuels management activities is included in the TOC modeling effort, in subwatersheds at high risk for uncharacteristic wildfire, the risk of adverse effects on listed fish species also was weighed for mechanical vegetation treatment versus wildfire (Risk of FM treatments in strongholds" predictor, Table 12). Where strongholds for ESA-listed anadromous fish species overlapped with a rating of high uncharacteristic wildfire risk, NOAA Fisheries has determined that the risk of adverse effects from fuels reduction treatments may pose a higher risk of adversely affecting listed fish than a wildfire in those subwatersheds. Subwatersheds at high risk of uncharacteristic wildfire that are also considered strongholds for listed salmon and steelhead occur only in the Little Salmon River and South Fork Salmon River subbasins.

The Forest Service BA also evaluated increased levels of risk associated with grazing, noxious weed treatment, recreation, and mining (summarized in Table 12, see Attachment 9 for detailed discussion of these evaluations). For grazing, subbasins with a higher percentage of lands suitable for grazing and a higher percentage of those lands managed under balanced (versus limited) grazing strategies were deemed more likely to result in adverse effects to listed fish species (Little Salmon River subbasin only). Subbasins at higher risk from noxious weed treatments included those with higher densities of roads, trails, and other forest facilities, areas with a higher likelihood of infestation and better access to detect and treat these infestations. The Little Salmon River subbasin was the only subbasin where the anticipated level of noxious weed treatment rated as a high risk to ESA-listed fish species. Because of uncertainty where increases or future activities would occur, risk from recreation and mining was related to current use levels observed within each subbasin. Recreation was generally expected to increase proportionately with increasing human populations in the area (highest in the South Fork Salmon River and Upper Salmon River subbasins), while minerals expansion was deemed most likely to continue in areas currently being used for mineral development (highest potential in Lower Middle Fork, Middle Salmon-Chamberlain, and South Fork Salmon River subbasins). Each of these elements will be discussed below in the effects summary for each subbasin.

**Hells Canyon Subbasin -** Approximately 5% (9,900 acres) of the Hells Canyon subbasin is administered by the SWIE, 6% (602 acres) of which is eligible to contribute to the Payette National Forests' ASQ. The ASQ would come from high risk MPCs (see Table 9 and related discussion re: MPC risk to ESA-listed fish species) in the Upper Deep Creek subwatershed, a subwatershed occupied in its lower reaches by Snake River steelhead and spring/summer chinook salmon.

The environmental baseline for the SWIE portion of this subbasin ranged between "functioning at risk" and "functioning appropriately" (See Table 7), with degraded habitat primarily resulting from high ECA values resulting from wildfire and water quality contamination from the now defunct and privately owned Red Ledge Mine. NOAA Fisheries has determined that projects designed under MPCs and the predicted level of activity in this subbasin are not likely to further degrade the environmental baseline and result in adverse effects to listed fish species or their habitat. This determination is based on the

following: (1) Only 6% of the SWIE acreage is eligible for contributing to the ASQ; (2) Acreage eligible for ASQ is located along the upper ridgeline of the Deep Creek subwatershed, avoiding steep sideslopes, and several miles upstream from habitat occupied by ESA-listed anadromous fish species; and (3) The remaining 94% of the acreage is assigned to low risk MPCs with an emphasis on maintaining the inventoried roadless character or passive restoration, with low levels of predicted ground disturbing activities.

**Little Salmon River Subbasin -** Approximately 47% (175,225 acres) of the Little Salmon River subbasin is administered by the Payette National Forest. Of this acreage, high risk MPCs (4.2, 5.1, and 5.2) occur in approximately 37% (64,800 acres) of that total, 49,373 acres of which has been included as eligible for contribution to the Payette National Forest ASQ. Sixty-one percent of the remaining acreage is in low risk MPCs, emphasizing primarily passive restoration or maintaining the roadless character. ESA-listed Snake River steelhead and spring/summer chinook salmon spawn and rear in the mainstem Little Salmon River and several tributaries. The Little Salmon River and tributaries above river mile 21 are currently blocked to anadromous fish; however, this upper section and accessible tributaries within it, is considered historic habitat for salmon and steelhead, and has been included in the designation of critical habitat for spring/summer chinook salmon.

Environmental baseline conditions in the mainstem are degraded, notably due to channelization, and to sediment inputs from grazing, timber harvest, roading, and other activities on Federal and non-Federal land. Most of the tributaries also have elevated substrate sediment and other reductions in habitat function. High risk MPCs and projected high management activity levels occur in several subwatersheds currently accessible to anadromous fish (including Elk, Lower Boulder, Upper Boulder, Lower Hazard, and Lower Hard Creek subwatersheds) and other subwatersheds above the barrier that affect spawning and rearing habitat in the mainstem (Upper Little Salmon, Trail, Middle Little Salmon, Sixmile/Threemile, Round Valley, Big, Upper and Lower Mud, and Lower/Upper/Little Goose Creek subwatersheds).

NOAA Fisheries evaluated the types of activities projected by Forest Service modeling for the LRMPs (and allowed under the high risk MPCs), as most of these will occur in watersheds occupied by or upstream from and potentially affecting listed salmon and steelhead. Forest Service modeling identifies relatively high levels of current and continued grazing; however, NOAA Fisheries consultation record and IIT monitoring reports indicate that the grazing allotments are not likely adversely affecting listed anadromous fish. NOAA Fisheries finds that SWRA Standard 4 in particular will ensure that Payette National Forest administered grazing in this subbasin will continue to have negligible effects on salmon and steelhead and their habitat. Noxious weed treatment programs are also factored into high risk MPC/high activity level categorization; however, current program level consultation (2001 BA; NOAA Fisheries draft 2003 Opinion) indicates adverse effects of toxic chemical application on salmon and steelhead can be effectively reduced through a series of limitations to the applications. This sort of program is likely to continue, as it must comply with SWRA Standard 4 and other proposed standards. The moderate recreation use of the Little Salmon River subbasin is projected to increase. NOAA Fisheries consultation record shows localized degradation of riparian vegetation and streambanks from recreation in this subbasin. MA-specific objectives were added to PNF MAs 4, 5, and 6 to address

recreation-related effects to riparian areas. Forest-wide and MA direction is expected to avoid most but not all adverse effects related to these increasing levels of recreation.

NOAA Fisheries is concerned about potential long-term adverse effects on listed fish habitat from increased levels of mechanical vegetation treatments (projected in several of the subwatersheds listed above) to address risks of uncharacteristic wildfire and urban area protection. Fuel reduction treatments may result in increasing ECAs above 15%, using the exception under SWRA standard 4 for short-term adverse effects on fish habitat where outweighed by demonstrable long-term benefits to the habitat (refer to discussion above, under Standards and Guidelines, regarding uncertainties associated with demonstrating and quantifying long-term benefits). Because vegetation treatments would overlap three subwatersheds identified as strongholds for ESA-listed steelhead and spring/summer chinook salmon, and effects from mechanical vegetation treatments may be greater to listed anadromous fish than from wildfire, NOAA Fisheries remains concerned regarding potential long-term effects on ESA-listed fish species in this subbasin. Watershed analyses have not been completed to inform the design of these projects. Payette National Forest has completed a subbasin assessment of the Little Salmon River that can provide useful subbasin level context for projects. A Consultation Framework document for this subbasin can provide additional watershed level information and result in projects that are well designed on the whole to protect and restore habitat for listed fish; however, this information may not be available within the first years of LRMP implementation, and vegetation projects are already being developed (e.g., Meadow Slope and Middle Little Salmon Projects).

Finally, the LRMPs do not offer area-specific direction to identify and reduce adverse effects from water withdrawals in this subbasin. At least two Federally-permitted water withdrawals (Yantis Ditch and Delbaere Campbell Ditch) reduce instream flows in subwatersheds containing anadromous fish, and other withdrawals and reservoir management upstream of the barrier affect instream flows in designated critical habitat, and may affect salmon and steelhead in the lower mainstem Little Salmon River. In general, existing authorities related to water withdrawals remain not completely clear; and debates about authorities have slowed completion of consultation and reduction of effects on listed fish of Federally-permitted water diversions in this subbasin. A Consultation Framework document can assist in clarifying instream flow needs and limiting factors for listed fish, but again this may not be available in the near term. Forest Service involvement in Subbasin Planning (described in the LRMPs and part of the environmental baseline under the 2000 Basinwide Recovery Planning document) will be particularly critical in this watershed to provide technical assistance in identifying and reducing effects on listed fish from both Federally-permitted and other water withdrawals (as well as from non-Federal grazing, and timber harvest effects).

**Lower Middle Fork Salmon Subbasin -** Approximately 33% (378,194 acres) of the Lower Middle Fork Salmon subbasin is administered by the SWIE. Approximately 89% of this subbasin is managed for conservation under wilderness designation (MPC 1.1). This subbasin has no high risk MPCs and will not contribute to ASQ for the Payette National Forest during this planning period. Moderate risk MPCs (3.2 & 4.1c MPC) that allow for active restoration occur in less than 8% of the subbasin (Table 10), located in the Smith Creek subwatershed, upstream from habitat known to be

used by ESA-listed Snake River steelhead and spring/summer chinook salmon for spawning and rearing in Big Creek.

The environmental baseline for this subbasin is primarily "functioning appropriately" in the wilderness, ranging between "functioning at risk" and "functioning appropriately" outside the wilderness (See Table 7). Historic mining, and localized rural/residential development have contributed to local degradation of the environmental baseline, most notably through sediment delivery associated with ground disturbing activities and road network development. Recent wildfire has also contributed to the degraded baseline, burning approximately 40% of the Big Creek watershed in the summer of 2000.

NOAA Fisheries evaluated the types of activities projected by Forest Service modeling for the LRMP, as most of these activities will occur in watersheds occupied by or immediately upstream and potentially affecting listed salmon and steelhead. The Forest Service modeling identified this subbasin as having moderate levels of recreation and a continuation of relatively high levels of mining. The moderate recreation use of the Lower Middle Fork Salmon River subbasin is projected to increase with increasing human populations. NOAA Fisheries consultation record does not demonstrate current degradation of riparian vegetation and streambanks from recreation in this subbasin. MA direction is expected to address increasing levels of recreation in this subbasin, particularly with the addition of MA-specific objectives for this subbasin to address effects to riparian areas from recreation sites and uses, and to identify and correct recreational campsites, parking areas, and trails that are causing sedimentation, compaction, or vegetation loss to subbasin habitat. Minerals activity has historically been high in portions of this subbasin, with most use concentrated around the Big Creek/Stibnite MA (PNF 13). This MA comprises approximately 3% of the subbasin. The Forest Service predicts that this MA would continue to have a higher potential for future small and large-scale mineral development. Because effects of mining on listed fish and their habitat vary tremendously depending on the scope and scale of the proposed project, NOAA Fisheries has determined that the direction applied Forest-wide and within MA/MPCs will avoid or reduce adverse effects to habitat conditions at the LRMP level, while use of the SWIE Matrix during project development at the NEPA-scale and during Section 7 ESA consultation will serve to further reduce the potential for adverse effects from future minerals activities at the project-level in this subbasin.

NOAA Fisheries expects that projects designed under plan-level direction in this subbasin will generally avoid and minimize adverse effects on listed fish species and their habitat. This determination is based on the following: (1) Eighty-six percent of the subbasin is included in wilderness designation; (2) The subbasin has no high risk MPCs and no acreage identified for contribution to the ASQ; and, (3) 93% of the acreage is assigned to low risk MPCs with a conservation emphasis, leading to low levels of predicted ground disturbing activities; and (4) project-specific consultation will further address potential adverse effects related to future mineral development.

**Lower Salmon River Subbasin -** Approximately 11% (84,295 acres) of the Lower Salmon River subbasin is administered by the SWIE. Of this acreage, approximately 12% (9,668 acres) is in high risk MPCs (MPC 5.1) and eligible to contribute to the Payette National Forests' ASQ. High risk MPCs are located in portions of the Elkhorn and French Creek watersheds, watersheds occupied by

Snake River steelhead and spring/summer chinook salmon in the downstream reaches. Low risk MPCs emphasizing passive restoration and maintenance of the unroaded character occur across the remaining 89% of the subbasin administered by the SWIE (Table 10).

The environmental baseline for this subbasin is primarily "functioning at risk," with only the habitat access identified as "functioning appropriately" (See Table 7). Timber harvest, grazing and private land development have contributed to degradation of the environmental baseline in this subbasin, most notably through sediment delivery associated with ground disturbing activities and development of valley bottom roads. ECAs in excess of 15% are currently found in six of the nine subwatersheds on the SWIE, related to a combination of wildfire and timber harvest activity.

NOAA Fisheries evaluated the types of activities projected by Forest Service modeling for the LRMP, as most of these activities will occur in watersheds occupied by or immediately upstream and potentially affecting listed salmon and steelhead. The Forest Service modeling identified this subbasin as having moderate levels of recreation, which are projected to increase with increasing human populations. NOAA Fisheries consultation record shows localized degradation of riparian vegetation and streambanks from recreation in this subbasin. MA-specific objectives were added to address recreation-related effects from trails and recreation sites in the subbasin. As levels increase, it is expected that recreation-related effects on fish and/or fish habitat would likely continue to occur. Forest-wide and MA direction is expected to avoid most but not all adverse effects related to these increasing levels of recreation.

Because high risk MPCs are located in subwatersheds with high ECAs, NOAA Fisheries is concerned about potential long-term adverse effects on listed fish habitat from future mechanical vegetation treatments in this subbasin. Vegetation treatments may further increase ECA values in this subbasin, using the exception under SWRA standard 4 for short-term adverse effects on fish habitat where outweighed by demonstrable long-term benefits to the habitat. Watershed analyses have not been completed to inform the design of these projects. A Consultation Framework document for this subbasin can provide additional watershed level information and result in projects that are well designed on the whole to protect and restore habitat for listed fish; however, this information may not be available within the first years of LRMP implementation.

Except for potential effects related to recreation and high ECA values, NOAA Fisheries expects that projects designed under plan-level direction in this subbasin will generally avoid and minimize adverse effects on ESA-listed fish species and their habitat. This determination is based on the following: (1) only 12% of the SWIE acreage is eligible for contributing to the ASQ; (2) acreage eligible for ASQ is located in the upper portions of watersheds above reaches inhabited by ESA-listed fish species (Elkhorn Creek and French Creek); and (3) the remaining 89% of the acreage is assigned to low risk MPCs with an emphasis on passive restoration and maintaining the inventoried roadless character, leading to low levels of predicted ground disturbing activities.

**Middle Salmon-Chamberlain Subbasin -** Approximately 40% (434,099 acres) of the Middle Salmon-Chamberlain subbasin is administered by the SWIE. Approximately 6% (26,021

acres) of this acreage is in high risk MPCs and eligible to contribute to the Payette National Forests' ASQ. High risk MPCs are located outside the true Middle-Salmon-Chamberlain subbasin, and in face drainages of Salmon River, including the Witsher, Bear-Johnson, Fall Creek, East Fork Fall, Middle/Upper Warren, and Steamboat subwatersheds of the Fall and Warren Creek watersheds. Snake River steelhead and spring/summer chinook salmon are located in the downstream reaches of these watersheds. Low risk MPCs occur across approximately 89% of the subbasin administered by the SWIE, the majority of which (76%) has a conservation emphasis as designated wilderness (Table 10).

Inside the wilderness, the environmental baseline is considered to be "functioning appropriately." Outside the wilderness, the environmental baseline for this subbasin is primarily "functioning at risk" (See Table 7). Timber harvest, mining, and grazing have contributed to degradation of the environmental baseline, primarily in non-wilderness portions of the subbasin. Large-scale dredge mining around the town of Warren has greatly altered habitat conditions in this portion of the subbasin. ECAs have also been identified as a potential issue in the subbasin, with 70% of the wilderness subwatersheds exceeding 15% due to wildfire, and 70% of the non-wilderness subwatersheds exceeding 15% due to a combination of wildfire and timber harvest activities.

NOAA Fisheries evaluated the types of activities projected by Forest Service modeling for the LRMP, as most of these activities will occur in watersheds occupied by or immediately upstream and potentially affecting listed salmon and steelhead. The Forest Service modeling identified this subbasin as having moderate levels of recreation and a continuation of relatively high levels of mining. The moderate recreation use of this subbasin is projected to increase with increasing human populations, with increased use most likely occur around the town of Warren. NOAA Fisheries consultation record shows localized degradation of riparian vegetation and streambanks from recreation in this subbasin. MA-specific objectives were added to address recreation-related effects from trails and recreation sites in the subbasin. Forest-wide and MA direction is expected to avoid most but not all adverse effects related to these increasing levels of recreation. Minerals activity has historically been high in this subbasin, with most use concentrated around the Warren Creek watershed where numerous mining claims and gravel pits exist (PNF MA 10). Specific MA direction has been added to this subbasin to restore fish habitat degraded from previous mining operations in the Upper Warren Creek watershed. The Forest Service predicts that this MA would continue to have a higher potential for future small and large-scale mineral development. Because effects of mining on listed fish and their habitat vary tremendously depending on the scope and scale of the proposed project, NOAA Fisheries has determined that the direction applied Forest-wide and within MA/MPCs will avoid or reduce adverse effects to habitat conditions at the LRMP level, while use of the SWIE Matrix during project development at the NEPA-scale and during Section 7 ESA consultation will serve to further reduce the potential for adverse effects from future minerals activities at the project-level in this subbasin.

Because high risk MPCs are located in subwatersheds with high ECAs, NOAA Fisheries is concerned about potential long-term adverse effects on listed fish habitat from future mechanical vegetation treatments in this subbasin. Vegetation treatments may further increase ECA values in this subbasin, using the exception under SWRA standard 4 for short-term adverse effects on fish habitat where

outweighed by demonstrable long-term benefits to the habitat. Watershed analyses have not been completed to inform the design of these projects. A Consultation Framework document for this subbasin can provide additional watershed level information and result in projects that are well designed on the whole to protect and restore habitat for listed fish; however, this information may not be available within the first years of LRMP implementation.

Except for potential effects related to recreation and high ECA values, NOAA Fisheries expects that projects designed under plan-level direction in this subbasin will generally avoid and minimize adverse effects on ESA-listed fish species and their habitat. This determination is based on the following: (1) Seventy-six percent of the subbasin is included in wilderness designation; (2) 89% of the acreage is assigned to low risk MPCs, leading to low levels of predicted ground disturbing activities; and (3) Monitoring and project-specific consultation will address potential adverse effects related to future mineral development.

**South Fork Salmon River Subbasin -** Approximately 98% (828,324 acres) of the South Fork Salmon River subbasin is administered by the SWIE. Of this acreage, high risk MPCs occur in approximately 4% (33,133 acres) of that total, of which 20,836 acres has been included as eligible for contribution to the ASQ for the Boise and Payette National Forests. High risk MPCs occur in the Warm Lake and Wardenhoff Bear subwatersheds (includes mainstem Lower Johnson Creek), subwatersheds in or immediately upstream from streams used by ESA-listed Snake River steelhead and spring/summer chinook salmon for spawning and rearing. Low risk MPCs occur across 66% of the remaining lands administered by the SWIE in the subbasin (Table 10), with primary emphasis on passive restoration, and or conservation as designated or recommended wilderness. The South Fork Salmon was identified as one of the subbasins with the greatest potential for management related threats from prescribed fire and thinning in the SWIE.

The environmental baseline for this subbasin is currently degraded and "functioning at risk" (See Table 7). Timber harvest, road construction, grazing, mining, and recreation have all been identified in combination with highly erodible soils as contributing the habitat degradation in the subbasin. High levels of instream sediment have resulted from historic ground-disturbing activities in this subbasin, a condition that has been trending toward recovery based on habitat restoration projects and restrictions imposed by interim direction for the subbasin.

NOAA Fisheries evaluated the types of activities projected by Forest Service modeling for the LRMPs, as most of these will occur in watersheds occupied by listed salmon and steelhead. The Forest Service modeling identified this subbasin as having high levels of recreation and a continuation of relatively high levels of mining in certain portions of the subbasin. The high recreation use of this subbasin is projected to increase. NOAA Fisheries consultation record shows localized degradation of riparian vegetation and streambanks from recreation in this subbasin. MA-specific objectives were added to address dispersed and developed recreation-related effects to riparian areas. Forest-wide and MA direction is expected to avoid most but not all adverse effects related to these increasing levels of recreation. Based on historical use in the subbasin, minerals activity is expected to remain high in this subbasin, with most use concentrated in four MAs on the Payette National Forest (PNF 11-14). The

portion of the Big Creek/Stibnite MA (PNF 13) located in this subbasin, in particular would continue to have a higher potential for small and large-scale minerals development. An objective has been added to address impacts from abandoned mines by identifying and rehabilitating abandoned mine lands to reduce effects to water quality and fish habitat for listed and native fish species. Because effects of mining on listed fish and their habitat vary tremendously depending on the scope and scale of the proposed project, NOAA Fisheries has determined that the direction applied Forest-wide and within MA/MPCs will avoid or reduce adverse effects to habitat conditions at the LRMP level, while use of the SWIE Matrix during project development at the NEPA-scale and during Section 7 ESA consultation will serve to further reduce the potential for adverse effects from future minerals activities at the project-level in this subbasin.

NOAA Fisheries is concerned about potential long-term adverse effects on listed fish habitat from increased levels of mechanical vegetation treatments to address risks of uncharacteristic wildfire and urban area protection in the South Fork Salmon River drainage. Ground-disturbing activities associated with fuel reduction treatments may result in increased levels of fine sediment deposition in streams used for spawning or rearing by listed anadromous fish, using the exception under SWRA standard 4 for short-term adverse effects on fish habitat where outweighed by demonstrable long-term benefits to the habitat. In addition, these vegetation treatments would overlap three subwatersheds identified as strongholds (Wardenhoff-Bear, Two-Bit Roaring, and Tyndall Stolle subwatersheds) for ESA-listed steelhead and spring/summer chinook salmon, where effects from mechanical vegetation treatments may be greater to these species than from wildfire. Therefore, NOAA Fisheries remains concerned regarding potential long-term effects of activities planned under the Revised LRMPs on ESA-listed fish species in this subbasin. A subbasin assessment has been completed, and watershed analyses have been completed for portions of the subbasin (e.g. to inform Blackmare/Fourmile Fuels Reduction Project); however, watershed analysis level information is not available for all portions of the subbasin where moderate and high risk MPCs and increased mechanical vegetation treatments are possible. A Consultation Framework document for this subbasin can provide additional watershed level information and result in projects that are well designed on the whole to protect and restore habitat for listed fish; however, this information may not be available within the first years of LRMP implementation, and vegetation projects are already being developed (e.g., Greater Yellowpine Project).

**Upper Middle Fork Salmon River Subbasin -** Approximately 20% (189,873 acres) of the Upper Middle Fork Salmon River subbasin is administered by the SWIE. This subbasin has no high risk MPCs and will not contribute to ASQ for the Boise or Payette National Forests during this planning period. Moderate risk MPCs (3.2 MPC) emphasizing active restoration occur in approximately 18% of the subbasin, located primarily in tributaries to the Bear Valley watershed, an important watershed for spawning and rearing of ESA-listed Snake River steelhead and spring/summer chinook salmon. Low risk MPCs occur across the remaining 82% of the subbasin administered by the SWIE, emphasizing passive restoration (22%) or conservation as wilderness or recommended wilderness (60%).

The environmental baseline is "functioning appropriately" within the wilderness, and primarily

"functioning at risk" outside the wilderness (See Table 7). Localized degradation of habitat has occurred as a result of historic dredge mining, past timber harvest, past livestock grazing, road development, and recreation. This has resulted in increased instream sediment, stream channel modification, and streambank instability, located primarily in Upper Marble Creek and the Bear Valley Watershed.

NOAA Fisheries expects that projects designed under plan-level direction in this subbasin will generally avoid and minimize adverse effects on ESA-listed fish species and their habitat. This determination is based on the following: (1) no high risk MPCs contributing to ASQ; (2) approximately 82% of the acreage is assigned to low risk MPCs with an emphasis on conservation of wilderness attributes or passive restoration; and (3) low levels of predicted ground disturbing activities.

**Upper Salmon River Subbasin -** Approximately 35% (546,537 acres) of the Upper Salmon River subbasin is administered by the SWIE (Sawtooth National Recreation Area). Of this acreage, high risk MPCs (6.1) eligible to contribute to the Sawtooth National Forests ASQ occur in <1% (1,833 acres). This ASQ is located in Champion Creek, a watershed designated as critical habitat for Snake River spring/summer chinook salmon and potentially occupied by Snake River steelhead. Moderate risk MPCs (3.2 & 4.1c MPCs) emphasizing active restoration occur in approximately 41% of the subbasin. Low risk MPCs occur across the remaining 58% of the subbasin administered by the SWIE (Table 10), emphasizing passive restoration or conservation as wilderness or recommended wilderness. This subbasin provides an array of mainstem Salmon River and tributary spawning and rearing habitats for threatened spring/summer chinook salmon and steelhead, and specific lake/stream spawning and rearing habitats for endangered sockeye salmon. Environmental baseline conditions vary greatly in the subbasin, though generally (in mainstem Salmon River and tributaries) there has been increased sedimentation of stream substrates and reduction of off-channel rearing habitat due to roads, recreation, and non-Federal land development and activities in riparian areas. Further, water withdrawals in several tributary streams reduce instream flows, cause seasonal blockages of access by listed fish, and (where unscreened) divert listed fish into irrigation ditches, thereby delaying or eliminating migration.

NOAA Fisheries evaluated the types and level of activities projected by Forest Service modeling for this subbasin, as these activities will occur in watersheds occupied by or affecting listed salmon and steelhead. In this subbasin, increasing levels of recreation and predicted high levels of mechanical vegetation treatment (e.g. projects associated with insect-killed trees, fuels reduction, etc.) rated as posing the highest potential to result in adverse effect to listed fish species in this subbasin. This is a popular recreation area with high levels of current use, and future use is expected to increase over the duration of the LRMP. NOAA Fisheries consultation record has shown localized degradation of riparian vegetation and streambanks from recreation in this subbasin. MA-specific objectives were added to PNF MAs 2 and 3 to address recreation-related effects to riparian areas and fish habitat. Forest-wide and MA direction is expected to avoid most but not all adverse effects related to these increasing levels of recreation.

Although only one subwatershed (Champion Creek) would contribute to ASQ, the Upper Salmon River subbasin was identified as having have a high risk of wildfire and/or substantial insect mortality in need of active restoration (as reflected through increased levels of MPCs with an active restoration emphasis). A TOC of 125% was modeled for the Upper Salmon River subbasin (see Attachment 10), indicating that anticipated levels of ground disturbing activities are likely to result in ECAs >15%, and may use the exception in SWRA Standard 4 for short-term adverse effects on fish habitat where outweighed by demonstrable long-term benefits to the habitat. Because TOCs over 100% represent an increased risk to ESA-listed fish species, NOAA Fisheries remains concerned regarding potential long-term effects on ESA-listed fish species from the anticipated amount of mechanical vegetation treatment that potentially could occur in this subbasin. Watershed analyses have not been completed to inform the design of these projects. A Consultation Framework document for this subbasin can provide similar information and result in projects that are well designed on the whole to protect and restore habitat for listed fish; however, this information may not be available within the first years of LRMP implementation, and vegetation projects are already being developed (e.g., Red Tree Project).

Finally, although the Sawtooth National Forest MAs 2 and 3 offer MA-specific objectives designed to reduce or eliminate continued adverse effects from water withdrawals in this subbasin, the non-mandatory nature of objectives make their completion uncertain. In general, existing authorities related to water withdrawals remain not completely clear; and debates about authorities and related scope of Forest Service analysis of instream flows have hindered completing consultation and reducing the effects on listed fish of many Federally-permitted water diversions in this subbasin. A Consultation Framework document can assist in clarifying instream flow needs and limiting factors for listed fish, but again this may not be available in the near term. Forest Service involvement in Subbasin Planning (described in the LRMPs and part of the environmental baseline under the 2000 Basinwide Recovery Planning document) will be particularly critical in this watershed to provide technical assistance in identifying and reducing effects on listed fish from both Federally-permitted and other water withdrawals.

2. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Other activities within the SWIE have the potential to adversely affect the listed species and critical habitat within the action area. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being reviewed through separate section 7 consultation processes. Past Federal actions have already been added to the environmental baseline in the action area.

Non-Federal actions are likely to continue affecting ESA-listed fish species. The cumulative effects in the action area are difficult to analyze, considering the broad geographic landscape covered by the action area, the uncertainties associated with non-Federal actions, and ongoing changes to the region's economy. Whether those effects will increase or decrease in the future is not known; however, based on the subpopulation and growth trends identified in this section, effects of non-Federal actions are likely to increase.

Predominant ongoing activities on state, tribal, and private lands include timber harvest, range management and grazing of domestic livestock, and road construction. Land uses also include limited amounts of cultivation and irrigation of hay fields and pastures, water diversions and water-right allocations, and residential development. State laws regulate these activities. Land uses on non-Federal land have been summarized by subbasin in Table 13.

Approximately nine percent of subbasins that support anadromous fish occur on private lands within the action area (LRMP BA, Chapter VI- Fisheries, Table VI-54). Areas that have the greatest potential for the effects described above from private land activities in anadromous subbasins include the Hells Canyon, Upper Salmon, Little Salmon, and Lower Salmon subbasins. Effects in these subbasins would be greatest along river valleys and the lower portions of major tributaries.

Lands administered by the State of Idaho comprise one percent of the subbasins that support anadromous fish within the action area. Subbasins that have the greatest potential for effects from state lands include the Hells Canyon, Little Salmon, and Lower Salmon. State administered logging and grazing is expected to contribute short-term adverse effects to spawning, rearing, and migration habitats for anadromous species.

Effects from these non-Federal activities on listed fish species and habitat are expected to be similar to those that occur on Federal lands, although the size, magnitude and potential for adverse effects may differ due to less restrictive management standards. For example, private land timber harvest and related road construction activities within Idaho are regulated by the Idaho Forest Practices Act (IFPA) under the Idaho Department of Lands (IDL). The IFPA does not provide a level of protection and conservation for ESA-listed fish and critical habitat comparable to that for Federally administered lands.

Another example of less restrictive non-Forest standards include state lands leased for grazing which are currently operated under BMPs established under Grazing Management Plans, overseen by the IDL. Grazing BMPs as identified in the Idaho State Agricultural Pollution Abatement Plan (State Plan) are not mandatory but recommended for private lands. Because compliance to the State Plan is not required on private lands, no monitoring plan is in place to evaluate potential direct and indirect impacts on ESA-listed fish species or designated critical habitat.

**Table 13. Non-Federal Activities on Private and State Lands.**

| Subbasin | HUC (4th Field) | % Non-Federal Land Ownership | | Dominant Land Use | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Private | State | Mining | Range | Irrigation/Diversion | Timber Harvest | Rural/Residential | Municipal Water Uses |
| Hells Canyon | 17060101 | 22 | 2 | X | X | X | X | | |
| Upper Salmon | 17060201 | 5 | <1 | X | X | X | X | X | X |
| U. Middle Fork Salmon[1] | 17060205 | <1 | <1 | X | | | X | | |
| L. Middle Fork Salmon[1] | 17060206 | <1 | <1 | X | X | X | | | |
| M. Salmon-Chamberlain | 17060207 | <1 | <1 | X | X | X | X | X | |
| South Fork Salmon | 17060208 | <2 | <2 | X | X | X | X | X | |
| Lower Salmon | 17060209 | 46 | 5 | | X | | X | X | |
| Little Salmon | 17060210 | 31 | 3 | X | X | X | X | X | |

Population growth and movement within the SWIE will cause demands for intensified rural development, as well as increased demands for water, municipal infrastructure, and other resources. In the past, local governments generally accommodated growth in ways that adversely affected listed fish habitat.

The populations of urban areas within the SWIE Forests have been growing rapidly and are predicted to continue to grow. Rural areas, on the other hand have been fairly static, and populations are predicted to remain or increase at a slower rate. As the populations increase in urban and rural areas, Federal lands (approximately 90%) are expected to remain the same, leaving around 10 % of private and state lands to accommodate the increase.

Non-Federal actions are likely to continue affecting listed species. Non-Federal lands comprise approximately 13% of the sockeye salmon ESU. Effects on sockeye salmon habitat from non-Federal lands would be expected along the upper mainstem Salmon River and lower elevation, valley bottoms in the ESU. Effects on spring/summer chinook salmon and steelhead from non-Federal activities would be low overall in the Salmon River when compared to other areas in the SWIE. Non-Federal lands

comprise approximately 10 percent of the Salmon River basin. However, cumulative effects from non-Federal lands would be expected to be highest for chinook salmon and steelhead in subbasins such as the Hells Canyon, Little Salmon, and Lower Salmon, subbasins with a relatively high percentage of non-Federal land (20 percent or more). The Upper Salmon would also be expected to have high amounts of cumulative effects on steelhead, and sockeye and chinook salmon. Although a much lower percentage of private and state lands are found in the subbasin, a wide variety of land uses occur and are expected to continue to occur within the subbasin (Table 13).

3. Consistency with Listed Species ESA Recovery Strategies

Recovery is defined by NOAA Fisheries regulations (50 CFR 402) as an "improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4 (a)(1) of the Act."

Until the species-specific recovery plans are developed, the FCRPS Opinion (NMFS 2000) and the related December 2000 Memorandum of Understanding Among Federal Agencies Concerning the Conservation of Threatened and Endangered Fish Species in the Columbia River Basin (Basinwide Salmon Recovery Strategy; Federal Caucus 2000) provides the best guidance for judging the significance of an individual action relative to the species-level biological requirements. In the absence of completed recovery plans, NOAA Fisheries strives to ascribe the appropriate significance to actions to the extent available information allows. Where information is not available on the recovery needs of the species, either through recovery planning or otherwise, NOAA Fisheries applies a conservative substitute that is likely to exceed what would be expected of an action if information were available.

The Forest Service has specific commitments to uphold under the Basinwide Salmon Recovery Strategy (Federal Caucus 2000). Commitments made pertinent to the proposed action include the following:

1. Retain or re-charter the IIT or a similar interagency team to aid in the transition from interim aquatic management strategies and products developed by the IIT to the long-term ICBEMP[7] direction;
2. Strategically focus Forest Service and BLM scarce restoration resources using broad-scale aquatic/riparian restoration priorities to first secure Federally-owned areas of high AI and second, restore out from that core, rebuilding connected habitats that support spawning and rearing;
3. Ensure that land managers consider the broad landscape context of site-specific decisions on management activities by requiring a hierarchically-linked approach to analysis at different

[7] Broad-scale implementation of ICBEMP has since been replaced by individual Forest Plan revision efforts under a Memorandum of Understanding between Federal agencies - Forest Service, BLM, NOAA Fisheries, FWS, Environmental Protection Agency and the Forest Service's Forest and Range Experiment Stations (USDA Forest Service et. al., 2002b) - which will cooperatively implement the "*The Interior Columbia Basin Strategy*" to guide efforts to update land use plans for National Forests and BLM lands in the four-state region.

geographical scales. This is important to ensuring that the type, location and sequencing of activities within a watershed are appropriate and done in the context of cumulative effects and broad-scale issues, risks, opportunities and conditions;

4. Cooperate with similar basin planning processes sponsored by the NPPC, Bonneville Power Administration and other Federal agencies, states and tribes to identify habitat restoration opportunities and priorities. Integrate information from these processes into ICBEMP subbasin review when appropriate;
5. Consult with NOAA Fisheries and FWS on land management plans and actions that may affect listed fish species following the Streamlined Consultation Procedures for Section 7 of the ESA, July 1999;
6. Collaborate early and frequently with states, tribes, local governments and advisory councils in land management analyses and decisions;
7. Cooperate with other Federal agencies (in particular NOAA Fisheries and FWS), states, and tribes in the development of recovery plans and conservation strategies for listed and proposed fish species. Require that land management plans and activities be consistent with approved recovery plans and conservation strategies;
8. Collaborate with other Federal agencies, states, tribes and local watershed groups in the development of watershed plans for both Federal and non-Federal lands and cooperate in priority restoration projects by providing technical assistance, dissemination of information and allocation of staff, equipment and funds;
9. Share information, technology and expertise, and pool resources, in order to make and implement better-informed decisions related to ecosystems and adaptive management across jurisdictional boundaries;
10. Collaborate with other Federal agencies, states and tribes to improve integrated application of agency budgets to maximize efficient use of funds towards high priority restoration efforts on both Federal and non-Federal lands;
11. Collaborate with other Federal agencies, states and tribes in monitoring efforts to assess if habitat performance measures and standards are being met;
12. Require that land management decisions be made as part of an ongoing process of planning, implementation, monitoring and evaluations. Incorporate new knowledge into management through adaptive management; and,
13. Enhance the existing organizational structure with an interagency basin-wide coordinating group and a number of sub-regional interagency coordinating communities. These coordinating groups and committees will ensure the implementation of ecosystem-based management across Federal agencies' administrative boundaries, resolve implementation issues, be responsible for data management and monitoring, and incorporate new information through adaptive management.

A discussion outlining how the LRMP Revisions have addressed each of these commitments has been included in Attachment 8 of this Opinion. The proposed action is consistent with the specific commitments and primary objectives of the Basin-wide Salmon Recovery Strategy.

## C. Conclusion

After reviewing the current status of the Snake River steelhead, sockeye salmon, spring/summer chinook salmon, and fall chinook salmon, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects in the action area, it is NOAA Fisheries' biological opinion that the Revised LRMPs are not likely to jeopardize the continued existence of Snake River steelhead, sockeye salmon, spring/summer chinook salmon, and fall chinook salmon, and not likely to destroy or adversely modify designated critical habitat. This conclusion is based in large part on the LRMPs' complete and effective ACS, and on examination of projected locations, types, and levels of activities.

Notable aspects of each of the ACS elements are : (1) The aquatic and riparian goals are founded on functioning ecosystems in keeping with current science; (2) use of WCIs, indicators of quality fish habitat conditions in project design and evaluation, has proven effective in application (NOAA Fisheries Matrix) over the last several years; (3) the RCA width delineation process is based on riparian functions, and will generally yield widths similar to or greater than interim widths; (4) for multi-scale analysis, the Consultation Framework, though new, is well constructed to serve as an effective, broadly-applied tool for analyzing and using subbasin- and watershed-specific information in project planning and consultation; (5) revised watershed priorities are at a different scale than interim Priority Watersheds, and yet still match well with those established watershed priorities; (6) restoration priorities were identified through a thorough data analysis, appear well patterned to improve habitat for increased production of listed fish, and target a finite set of areas to increase the likelihood restoration will be accomplished and effective;
(7) monitoring incorporates new components (LUCID), and yet is linked to the interim basin-wide program (IIT); and (8) standards and guidelines provide specific direction for a variety of activities such that project designs are expected to consistently avoid jeopardy/adverse modification.

NOAA Fisheries did note ways in which some of the ACS components can be strengthened. Standards and Guidelines in particular place a burden on project-level consultation to, for instance, weigh short- versus long-term effects on ESA-listed fish, understand existing authorities, and ensure there is negligible degradation of high quality habitats important to ESA-listed fish (re: the definition of "maintain"). Examination of where this project-level consultation burden may fall by subbasin, shows that a large portion of the SWIE occupied by ESA-listed salmon and steelhead will be managed such that risks to ESA-listed fish are low or moderate. For the subset of "high risk" areas, with potentially increased activity levels and important habitats for listed fish (e.g., Little Salmon River, Upper Salmon River, and some areas of South Fork Salmon River), NOAA Fisheries finds that well informed project-level consultation, founded on the Consultation Framework documents for those subbasins, will be the key to minimizing risks and realizing longer term benefits to ESA-listed fish species in those subbasins.

## D. Conservation Recommendations

Conservation recommendations are defined as "discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information" (50 CFR 402.02). Section 7 (a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. NOAA Fisheries believes the conservation recommendations listed below are consistent with these obligations, and therefore should be implemented by the Forest Service.

1. The Forest Service should evaluate and report to NOAA Fisheries the effectiveness of rehabilitation efforts in RCAs in response to fire suppression activities (use of heavy machinery, fire retardants, camp and base locations, etc.) that affected RCAs.

2. For subbasins identified as currently having moderate to high levels of recreation (i.e., Little Salmon, Lower Salmon, Middle-Salmon Chamberlain, South Fork Salmon, and Upper Salmon subbasins), the Forest Service should evaluate and describe (in its 5-year Forest Plan monitoring reports) how changing levels of recreation are expected to affect ESA-listed anadromous fish and designated critical habitat throughout the remainder of the planning period.

3. The Forest Service should continue to complete annual reporting requirements for herbicide use in the Little Salmon River subbasin beyond the 2006 expiration date of the Payette National Forest Herbicide Treatment consultation. NOAA Fisheries is currently drafting a biological opinion for herbicide treatment on the Payette National Forest, including the Little Salmon River subbasin. Consultation is expected to be completed prior to the application season in 2003, expiring in 2006. Included in the proposed action and draft Opinion, monitoring and adaptive management will require an annual review of herbicides, their application rates, application procedures, and total acreage treated.

4. Over the planning period, the Forest Service objective for fish habitat restoration should be to move at least two ACS Priority Subwatersheds per subbasin into a "functioning appropriately" condition. The SWIE Matrix (LRMP Appendix B) should be used to assist in assessment of this objective. In addition, the Forest Service should initiate habitat improvements in the other ACS Priority Subwatersheds as identified by WARS. The strategy to achieve this objective should include steps to coordinate restoration activities, and should take advantage of opportunities to pool funding (within Forest Service, and among other sources including NOAA) across administrative boundaries to accomplish top priority restoration projects.

In order for NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed species or critical habitat, NOAA Fisheries requests notification of the achievement of any conservation recommendations when the action agency submits its monitoring report describing action under this Opinion or when the project is completed.

## E. Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) The amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded (it should be noted that the first item listed above does not apply to this consultation, because the amount or extent of take has not been specified in this Opinion); (2) new information reveals effects of the action may affect listed species in a way not previously considered; for instance, if NOAA Fisheries assumptions outlined in Section I.D. are violated, or if unforseen circumstances (e.g., large wildfires, insect infestations, etc.) create a major change in patterns of activities not analyzed in the proposed action; (3) the action is modified in a way that causes an effect on listed species that was not previously considered (e.g., one-time amendments to LRMPs, change in Forest Manual or Handbook direction relevant to effects on ESA-listed fish species, etc.); or (4) if a new species is listed or critical habitat is designated that may be affected by the action.

## F. Incidental Take Statement

Section 9 and rules promulgated under subsection 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined in 50 C.F.R. 222.102 to include "significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns including breeding, spawning, rearing, migrating, feeding, or sheltering." Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of an incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

This incidental take statement sets forth reasonable and prudent measures, and terms and conditions, that the Forest Service must implement at the plan level, in order to be eligible for an incidental take exemption at the project level. This incidental take statement does not authorize the taking of any listed species. Incidental take will be authorized for a particular project or activity when NOAA Fisheries consults on the project or activity. The 7(o)(2) exemption will become effective for that project or activity at that time, provided that the Forest Service complies with the terms and conditions of this statement and any additional terms and conditions specified in the project level incidental take statement. The terms and conditions that appear in this incidental take statement are those that NOAA Fisheries believes (1) can be implemented only at the plan level, and (2) are necessary to minimize take associated with subsequent projects or activities.

1. Amount or Extent of Take

The proposed action is reasonably certain to result in incidental take of the listed species at the project level. The NOAA Fisheries is reasonably certain the incidental take described here will occur because: (1) surveys indicate the listed species are known to occur in the action area; and (2) certain activities carried out in accordance with the proposed action are likely to adversely affect essential habitat features of critical habitat that would in turn impair feeding, breeding, or sheltering for the listed species. The extent of take can not be anticipated until the project level consultation and will be described in each project level incidental take statement.

2. Reasonable and Prudent Measures

Reasonable and Prudent Measures (RPMs) are non-discretionary measures to minimize take, that may or may not already be part of the description of the proposed action. They must be implemented as binding conditions for the exemption in section 7(o)(2) to apply. The Forest Service has the continuing duty to regulate the activities covered in this incidental take statement. If the Forest Service fails to carry out required measures, fails to require applicants to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) that will become effective at the project level may lapse.

The NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of listed fish resulting from implementation of the action. These reasonable and prudent measures would also minimize adverse effects on designated critical habitat.

The Forest Service shall:

1. Minimize the likelihood of incidental take by clarifying local sideboards pertaining to:
   a. RCA delineation use of floodprone width;

b. Landslide-prone monitoring by risk class;
c. Definitions of "maintain" and "duration of effects in project-level application of the SWIE Matrix;
d. Fire Management timelines for fire operational resource guidance;
e. Exceptions to guidelines pertaining to ESA-listed anadromous fish; and,
f. Forest Service levels of discretion for actions where authority is limited.

2. Minimize the likelihood of incidental take by maintaining the necessary linkages between the SWIE LRMP and broad-scale restoration/recovery strategies.

3. Minimize the likelihood of incidental take by implementing subbasin-specific direction as outlined for the Upper Salmon River and South Fork Salmon River subbasins.

3. Terms and Conditions

To be eligible for an exemption from the prohibitions of Section 9 of the ESA at the project-level, the Forest Service must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity. These terms and conditions are non-discretionary.

1. To implement RPM #1, clarification of local sideboards, the Forest Service shall:

A. RCA

Assess the effectiveness of floodprone widths in protecting riparian functions and processes (identified in LRMP Appendix B, page B-37) from the effects of different types of activities along forested and unforested streams, and confined and unconfined channel types. This assessment can be included as a portion of the existing "Riparian Condition" monitoring element.

B. Landslide-prone

Include within their existing monitoring element "Landslide Prevention," stratification by hazard class (i.e., low, moderate, and high).

C. Definitions

1. When applying the SWIE Matrix in project-level consultation for ESA-listed anadromous fish species, identify any measurable change in WCIs (including reductions within the functioning appropriately category, which the LRMPs

classify as "maintain"), evaluate the potential for adverse effects on listed species and their habitat, and design projects to avoid or minimize adverse effects, such as incremental reduction of high quality habitats.

2. When completing SWIE Matrix Table B-3 in project-level consultation, specifically define the anticipated duration (e.g., days, weeks, months, etc.) of potential effects on WCIs for each of the three temporal scales (temporary, short, and long-term) as appropriate to address effects on listed anadromous fish species and their habitat.

D. Fire Management

Develop operational resource guidance for each Forest (camp locations, water dipping areas, chemical application guides, etc. [as outlined in TEPC Objective 23]) prior to the 2004 fire season.

E. Exception to Guidelines

For projects that may affect ESA-listed anadromous fish species or their habitat, identify variance from a guideline that pertains to avoiding or minimizing adverse effects on these species or their habitat, and provide rationale for deviation from that guideline to NOAA Fisheries during project-level ESA consultation.

F. Clarify levels of discretion, prior to new authorizations

For projects that may affect ESA-listed anadromous fish species or their habitat, and Forest Service authority is limited (i.e., hydropower, water conveyance, or mining actions), provide NOAA Fisheries with a description of its authorities prior to or during project-level ESA consultation on those actions.

2. To implement RPM #2, Maintain linkages between the SWIE LRMP and broad-scale restoration/recovery strategies, the Forest Service shall:

A. Provide an oversight and accountability body that links to IIT by continuing to work with the IIT (or body implementing P/I and 1995/1998 LRMP Opinions) and provide exchange of information regarding processes that are local in scope, but have broad-scale implications, such as subbasin planning, watershed analysis, and monitoring.

B. In the Upper Salmon, South Fork Salmon, and Little Salmon River subbasins,

not allow likely to adversely affect actions with adverse effects lasting three years or longer on ESA-listed anadromous fish species or their habitat prior to completion of the appropriate consultation framework document, unless informed or driven by recommendations from existing or new subbasin assessments or watershed analyses.

3. To implement RPM #3, implement direction as outlined for the Upper Salmon River and South Fork Salmon River subbasins, the Forest Service shall:

A. In the Upper Salmon River subbasin, not increase ECA values above 15% in watersheds with ESA-listed anadromous fish species unless supported by hydrologic analysis. Analyses will be evaluated by NOAA Fisheries for projects that require ESA-consultation.

B. In the South Fork Salmon River, the Payette and Boise National Forests shall:

1. In coordination with FWS and NOAA Fisheries, within 2-years of signing the ROD, revise the default WCI values to appropriate values for this subbasin based on the best available data on functioning habitat conditions for ESA-listed fish within the subbasin.

2. Continue its current sampling, analysis, and annual reporting of sediment levels (core, free matrix/pebble counts, and cobble embeddedness) in the mainstem and tributaries for the duration of the Revised LRMPs.

3. For projects that require ESA-consultation, ensure that each project (with the exception of activities outside Forest Service discretion, or projects that directly repair salmon or steelhead habitat) that has more than a negligible likelihood of adverse effects (i.e. likely to adversely affect) on ESA-listed fish or their habitat meets the applicable criteria:

a. For projects proposed in upper portions of the subbasin, upstream of main spawning areas (Stolle Meadows, Dollar, Poverty Flats, Secesh Meadows, Lake Creek, etc.), or that involve road construction, opening closed roads, or activities on high or moderate risk landslide-prone areas, Forest Service must demonstrate (e.g., from monitoring results of projects below main spawning areas) during planning or consultation that similar projects have been implemented and sediment delivery to streams was avoided or minimized.

b. Other projects will provide rationale, incorporating the best available existing information including sediment monitoring

data, that sediment delivery will likely be avoided or minimized.

c. For projects where sediment delivery is a contributing factor to the "Likely to Adversely Affect" determination, monitor and evaluate the effectiveness of mitigating measures used to avoid or minimize sediment delivery. The need for additional sediment monitoring related to "Not Likely to Adversely Affect" projects will be determined in project-level Section 7 consultation with NOAA Fisheries, on a case-by-case basis.

## III. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

### A. Background

Public law 104-267, the Sustainable Fisheries Act of 1996, amended the MSA to establish new requirements for EFH. The regulations require designation of EFH in Federal fishery management plans. The EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (MSA section 3). The Pacific Fisheries Management Council (PFMC) has designated EFH for Federally managed Pacific groundfish and

coastal pelagic and Pacific salmon fisheries. The EFH for the groundfish and coastal pelagic fisheries are marine designations, while the Pacific salmon EFH includes freshwater, marine, and estuarine environments.

The EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location. The consultation requirements of section 305(b) of the MSA (16 U.S.C. 1855[b]) provide that:

1. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.

2. NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH.

Federal agencies shall, within 30 days after receiving conservation recommendations from NOAA Fisheries, provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is

inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

## B. Pacific Coast Salmon and EFH Affected by the Proposed Actions

The Pacific Coast Salmon Fishery Management Plan (FMP) was approved by the Secretary of Commerce on September 27, 2000. Pacific salmon species covered in the FMP are coho salmon (*Oncorhynchus kisutch*), chinook salmon (*O. tshawytscha*), and pink salmon (*O. gorbuscha*). The FMP designates EFH for the Pacific salmon fishery as all those streams, lakes, ponds, wetlands, and other waterbodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above certain impassable barriers identified by PFMC, or above longstanding naturally impassable barriers (i.e., natural waterfalls in existence for several hundred years) (PFMC 1999). Activities occurring above impassable barriers that are likely to adversely affect EFH are subject to the consultation provisions of the MSA. Snake River chinook salmon have designated EFH throughout the project and action areas.

## C. Summary of Proposed Action

The proposed action and action area are detailed above in Sections I.B. and I.C. of this document. The action area includes habitats that have been designated as EFH for various life-history stages of Snake River chinook salmon.

## D. Effects of the Proposed Action on EFH

1. General Considerations

As noted above in the Opinion, the proposed action is likely to adversely affect habitat for these species. Similarly NOAA Fisheries expects the proposed action is likely to have adverse effects on EFH.

This Opinion discusses in section V, Analysis of Effects, the direct, indirect, and cumulative effects of the proposed actions on anadromous fish habitat in the action area. The principal effects of the Revised SWIE LRMPs on salmon EFH are not likely to jeopardize the continued existence of Snake River chinook salmon or result in the destruction or adverse modification of EFH.

2. Estuary and Nearshore EFH

Estuary and nearshore EFH is not affected by the proposed action due to its location several hundred miles inland.

3. Coastal Pelagic EFH

Coastal pelagic EFH is not affected by the proposed action due to it location several hundred miles inland.

4. Salmon EFH

The proposed action may adversely affect EFH for Snake River chinook salmon.

## E. Conclusion

NOAA Fisheries concludes that the SWIE Revised LRMPs may adversely affect designated EFH for Snake River chinook salmon.

## F. EFH Conservation Recommendations

Conservation recommendations are discretionary measures suggested to avoid, minimize, or otherwise offset adverse modification of EFH, or to develop additional information. NOAA Fisheries worked with the Forest Service, through consultation, to incorporate measures to avoid or minimize adverse effects of the proposed activities. Consequently, the proposed action includes mitigation to avoid effects on EFH, and additional non-discretionary conservation measures are required by this Opinion as reasonable and prudent measures and terms and conditions. No further conservation measures are necessary for EFH.

## G. Statutory Response Requirement

The MSA and Federal implementing regulations (50 CFR Section 600.920) require Federal action agencies to provide NOAA Fisheries a written response to EFH conservation recommendations within 30 days of receipt. Since there are no conservation recommendations for the proposed actions in this consultation, the Forest Service is not required to provide a written response.

## H. Supplemental Consultation

The Forest Service must reinitiate EFH consultation with NOAA Fisheries if the action is revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis

for NOAA Fisheries' EFH conservation recommendations (50 CFR Section 600.920 [k]).

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**ATTACHMENT #1**
**RCA CRITERIA and APPLICATION**

The RCAs under the LRMP ACS Component #3 fall into one of four categories, briefly summarized below but described in more detail in Appendix B of the LRMPs:

**I. Forested Streams** *(Perennial streams and intermittent streams providing seasonal rearing and spawning habitat)******

A. In the absence of local field data, 300-foot slope distance from the ordinary high water mark; Or,
B. Flood-prone width or two site-potential tree heights, whichever is greatest; Or,
C. Defined based on a site-specific analysis by a qualified specialist with expertise in the field of riparian function and ecological processes.

**II. Forested Streams** *(Intermittent Streams)**

A. In the absence of local field data, 150-foot slope distance from the ordinary high water mark; Or,
B. Flood-prone width or one site-potential tree height, whichever is greatest; Or,
C. Defined based on a site-specific analysis by a qualified specialist with expertise in the field of riparian function and ecological processes.

**III. Ponds, Lakes, Reservoirs, and Wetlands ***

A. In the absence of local field data, 150-foot slope distance from the ordinary high water mark; Or,
B. Outer edge of seasonally saturated soils or one site-potential tree height, whichever is greatest; Or,
C. Defined based on a site-specific analysis by a qualified specialist with expertise in the field of riparian function and ecological processes.

**IV. Non-Forested Streams (Perennial and Intermittent Streams)***

A. The extent of the flood prone width, or riparian vegetation, whichever is greatest; Or,
B. Defined based on a site-specific analysis by a qualified specialist with expertise in the field of riparian function and ecological processes.

*Note: Sediment delivery distances vary based upon the combination of proposed management actions and the inherent site characteristics. Because sediment delivery distances may exceed the selected option, RCAs may need to be adjusted to avoid or minimize delivery to the associated waterbody under any option.

***Using the RCA Delineation Criteria*** - Effective use of the RCA delineation requires a full understanding of the selection criteria options within each of the four categories identified above. Delineating an RCA requires two decisions: (1). Identify appropriate category (I, II, III, or IV); and (2). Identify which option, or criteria, within that category to use.

The decision for which option to choose should occur through discussions with the interdisciplinary team, resource specialists and/or the line officer. In general, determining the level of analysis that best suits the needs of the project will be driven by the potential effects of the project, environmental baseline conditions, management direction, and issues associated with the project/area of interest (e.g., subwatershed) that were identified through scoping, the work of the interdisciplinary team, or the line officer. Written documentation of the chosen RCA delineation option within a category, and the rationale behind it should be included in record documentation for the project.

***Categories I, II, III, IV – Describing the Options*** - The options within a given Category have varying levels of associated analysis that is involved with delineating the RCA. Category IV, Non-forested Streams, differs from the other Categories in that it does not designate a set distance and therefore has two options rather than three.

*Option 1* - In lieu of field data, selection of the first option provides a conservative boundary, generally in excess of two site-potential tree heights[8] in the case of the 300-foot slope distance and greater than one site-potential tree height in the case of the 150-foot slope distance. Site-potential tree heights would generally be expected to account for most riparian processes including stream shading, LWD recruitment, fine organic litter input, bank stabilization, sediment filtration, windthrow, riparian microclimate and productivity, and wildlife habitat. Selection of this option is expected to provide land managers with the option of delineating an RCA in the absence of field confirmation with the expectation that the distance would account for most riparian functions and ecological processes in a system.

*Option 2* - The second option, which is used similarly in Categories I-IV, requires field verification of certain site characteristics and provides a more site-based delineation of an RCA boundary for a specific location. Depending on which Category (I, II, III, or IV) is involved, options include use of floodprone width, site-potential tree height, or riparian vegetation, whichever is greatest, given the category.

This option requires that certain field data be collected from the project area and analyzed to determine the RCA boundary. It is considered an option requiring potentially less data collection than a site-specific analysis (Option 3), but it is more appropriately tied to the landscape than a default distance might be (Option 1).

*Option 3* - The third option, which is used in Categories I-IV, is the use of a site-specific analysis to define the RCA. This option requires the most thorough analysis of the three options in that when

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[8] Site-potential tree heights have been established by Forest and Potential Vegetation Group (PVG). See Attachment 6 of this Opinion *or* Appendix B of the Revised LRMPs for values by PVG.

defining the RCA, the specialist conducts an on-site analysis of the riparian functions and ecological processes associated with the stream, pond, lake, reservoir or wetland, and defines the RCA based on the distance that best encompasses the extent of those functions and processes.

The value expected to be gained from this effort is a site-specific RCA delineation appropriate to the functions and processes between upland terrestrial habitats and adjacent aquatic habitats for that area. This information potentially provides more opportunities for project design because the existing condition is better known, allowing the effects of actions to be better assessed, and project design to be more responsive to needs of the aquatic ecosystem.

In summary of the three options, the RCA delineation is a step down process that provides flexibility for different levels of analysis that, regardless of the option chosen, will provide for riparian functions and ecological processes. The decision on which option to use must involve considerations of the project in regard to potential effects, baseline, and issues and their relationship to riparian functions and ecological process.

Riparian functions and ecological processes that should be considered are taken mainly from Spence et al (1996) and include, but are not limited to, the following:

1. Stream Shading
2. Large Woody Debris Recruitment
3. Fine Organic Litter
4. Bank Stabilization
5. Sediment Control
6. Nutrients and Other Dissolved Materials
7. Riparian Microclimate and Productivity
8. Wildlife Habitat
9. Windthrow

The effectiveness of delineating an accurate RCA provides decisionmakers with the information necessary for sound decision regarding management activities within a watershed. Without an understanding of the riparian functions and ecological processes of a system, and the means by which actions may affect them, opportunities to design activities to maintain those processes may be overlooked.

For a detailed discussion of RCA delineation considerations, and discussion on the options within this definition, see Appendix B – Guidance for Delineation and Management of Riparian Conservation Areas -- in the LRMPs.

**ATTACHMENT #2**
**LEVELS/TYPES of DIRECTION FOUND in LRMPs**

## A. Desired Condition

Desire Condition (or Desired Future Condition), is a portrayal of the land, resource, or social and economic conditions that are expected in 50-100 years if management goals and objectives are achieved. This is a vision of the long-term conditions of the land.

## B. Goals

Goals are concise statements that help describe desired conditions, or how to achieve those conditions. Goals are typically designed to maintain conditions if they are currently within their desired range, or restore conditions to their desired range if they are currently outside that range. Goals are normally expressed in broad, general terms that are timeless, in that there are no specific dates by which the goals are to be achieved. Goal statements form the basis from which objectives are developed.

## C. Objectives

*Objectives* are concise time-specific statements of actions or results designed to help achieve goals. Objectives form the basis for project-level actions or proposals to help achieve Forest goals. Like goals, objectives are typically designed to maintain conditions if they are currently within their desired range, or restore conditions to their desired range if they are currently outside that range. The time frame for accomplishing objectives, unless otherwise stated, is generally considered to be the planning period, or the next 10 to 15 years. More specific dates are not typically used because accomplishment can be delayed by funding, litigation, environmental changes, and other influences beyond the Forests' control.

## D. Standards

*Standards* are binding limitations placed on management actions. Standards are typically action restrictions designed to prevent degradation of resource conditions, or exceeding a threshold of unacceptable effects, so that conditions can be maintained or restored over time. However, exceptions are made in some cases to allow temporary or short-term degrading effects in order to achieve long-term goals (e.g., SWRA Resources Standard #04). Standards must be within the authority and ability of the Forest Service to enforce. A project or action that varies from a relevant standard may not be authorized unless the LRMP is amended to modify, remove, or waive application of the standard.

## E. Guidelines

*Guidelines* represent a preferred or advisable course of action generally expected to be carried out. Guidelines often indicate measures that should be taken to help maintain or restore resource conditions, or prevent resource degradation. Deviation from compliance does not require a LRMP amendment (as with a standard), but rationale for deviation must be documented in the project decision document.

## ATTACHMENT #3

**Table 1. Excerpt from ACS Crosswalk (USDA Forest Service 2003e) Comparing PACFISH Riparian Goals with Forest-wide Goals in LRMP Revision.**

| PACFISH/INFISH Riparian Goal | Corresponding Direction in LRMP Revisions |
|---|---|
| **GOAL 1:** Maintain or restore water quality, to a degree that provides for stable and productive riparian and aquatic ecosystems. | **SWRA GOAL #5)** Design and implement watershed management programs and plans that will restore water quality and watershed function to support beneficial uses.<br><br>**SWRA GOAL #6)** Meet or surpass State water quality standards by planning and designing land management activities that protect water quality.<br><br>**SWRA GOAL #7)** Provide water quality for stable and productive riparian and aquatic ecosystems while fully supporting appropriate beneficial uses.<br><br>**SWRA GOAL #8)** Manage water quality to meet requirements under the Clean Water Act and Safe Drinking Water Act, with special emphasis on de-listing water quality limited water bodies under Section 303(d) and supporting state development and implementation of TMDLs.<br><br>**SWRA GOAL #9)** Promote integration of planning, analysis, implementation, and monitoring efforts that support the Endangered Species Act, Magnuson-Stevens Act, and Clean Water Act requirements. |
| **GOAL 2:** Maintain or restore stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed | **SWRA GOAL #2)** Provide for stream channel integrity, channel processes, and the sediment regime under which the riparian and aquatic ecosystems evolved. |

| PACFISH/INFISH Riparian Goal | Corresponding Direction in LRMP Revisions |
|---|---|
| **GOAL 3:** Maintain or restore instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges | **SWRA GOAL #4)** Restore and maintain flow regimes sufficient to create and sustain soil-hydrologic and water quality conditions, and riparian, aquatic and wetland habitats, and to achieve patterns of sediment, and nutrient and large woody debris routing within their inherent range of capability. |
| **GOAL 4:** Maintain or restore natural timing and variability of the water table elevation in meadows and wetlands | **SWRA GOAL #3)** Maintain surface and ground water in streams, lakes, wetlands, and meadows to support healthy riparian and aquatic habitats; the stability and effective function of stream channels; and downstream uses. |
| **GOAL 5:** Maintain or restore diversity and productivity of native and desired non-native plant communities in riparian zones | **SWRA GOAL #14)** Diversity and productivity of native and desired non-native plant communities in riparian conservation areas: a) Provide amounts and distribution of large woody debris consistent with desired forest vegetation conditions described in Appendix A; b). Provide adequate summer and winter thermal regulation within the aquatic and riparian zones; and c). Achieve rates of surface erosion, bank erosion, and chemical migration characteristic of those under which the communities developed.<br><br>**SWRA GOAL #15)** Provide habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities. |
| **GOAL 6:** Maintain or restore riparian vegetation, to:<br>(a) provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems;<br>(b) provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed. | **SWRA GOAL #14)** - See Above |

| PACFISH/INFISH Riparian Goal | Corresponding Direction in LRMP Revisions |
|---|---|
| **GOAL 7:** Maintain or restore riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geo-climatic region | **SWRA GOAL #14)** - See Above<br><br>**SWRA GOAL #15)** - See Above<br><br>**TEPC Objective 9)** As funding allows, implement restoration activities in accordance with the current Watershed and Aquatic Recovery Strategy or Forest Service-approved portions of recovery plans to: a) Restore listed fish species distribution; b) Restore desired habitat conditions; c) Conserve genetic diversity; and, d). Provide for genetic exchange.<br><br>**TEPC Objective 14)** During mid- or project-scale analysis, identify and prioritize opportunities for restoration of habitat linkage zones to promote genetic integrity and species distribution.<br><br>**SWRA Objective 12)** Design and implement management actions so they do not fragment habitat for native and desired non-native fish species. Restore connectivity in currently fragmented habitat where the risk of genetic contamination, predation, or competition from exotic fish species is not a concern.<br><br>**SWRA Objective 13)** During fine and site/project-scale analysis, identify and prioritize opportunities for restoration of habitat linkage to promote genetic integrity and species distribution. |
| **GOAL 8:** Maintain or restore habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities. | **TEPC GOAL #1)** Provide habitat capable of contributing to the survival and recovery of species listed under the ESA (see Appendix E for current list of species).<br><br>**TEPC GOAL #2)** Provide habitat that will help keep Proposed or Candidate species from becoming listed (see Appendix E for current list of species). |

| PACFISH/INFISH Riparian Goal | Corresponding Direction in LRMP Revisions |
|---|---|
| **GOAL 8 (cont.)** | **TEPC GOAL #3)** Balance the need for restorative actions to address the long-term threats to listed and proposed species with the short-term need to protect listed and proposed species and their habitats.<br><br>**TEPC GOAL #4)** Design and implement management actions to provide for ecological conditions, population viability, reproductive needs, and habitat components for Threatened, Endangered, Proposed, and Candidate (TEPC) species.<br><br>**TEPC GOAL #5)** Provide for well-distributed habitat capable of maintaining self-sustaining, complex interacting groups of TEPC species.<br><br>**TEPC GOAL #6)** Provide habitat capable of maintaining stable or increasing trends in abundance of TEPC species in all recovery units.<br><br>**SWRA GOAL #9)** Promote integration of planning, analysis, implementation, and monitoring efforts that support the Endangered Species Act, Magnuson-Stevens Act, and Clean Water Act requirements.<br><br>**SWRA GOAL #15)** Provide habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.<br><br>**Wildlife Resources Goal #1)** Provide habitat capable of supporting viable populations of native and desired non-native wildlife species.<br><br>**Vegetation Goal #1)** Maintain or restore desired plant community components, including species composition, size classes, canopy closures, structure, snags, and coarse woody debris as described in Appendix A.<br><br>**Vegetation Goal #2)** Maintain or restore vegetative conditions as described in Appendix A to provide for ecological processes, including disturbance regimes, soil-hydrological processes, nutrient cycles, and biotic interactions. |

| PACFISH/INFISH Riparian Goal | Corresponding Direction in LRMP Revisions |
|---|---|
| **GOAL 8 (cont.)** | **Botanical Resources Goal #1)** Provide habitat capable of: a) Supporting viable populations of native plant species within the Forest, and; b) Supporting plant biodiversity to meet social needs, biological diversity, and ecological and functional integrity.<br><br>**Botanical Resources Goal #6)** Manage plant community habitats (i.e., riparian, wetland, and upland forest, shrub, valley peatlands, and grassland habitats) to provide for: a) The desired amount, quality, and distribution of habitats; b) Reduced fragmentation within habitats; c) Juxtaposition and connectivity to other habitats; d) Ecosystem processes that shape habitat. |

**ATTACHMENT #4**

**Riparian Conservation Areas**

Microclimate, large woody debris, litter fall, streambank stabilization, sediment control, overhanging cover, and nutrient/pollution filtration are essential functions provided by riparian vegetation related to the development and maintenance of salmonid habitat (Gregory et al. 1991; Johnson and Ryba 1992; Spence et al. 1996; Naiman et al. 2000). Removal of riparian vegetation through various land use practices can diminish each of these important functions.

Aquatic and riparian systems are easily affected by land management activities on the surrounding hillslopes, the effects of which vary dependent on the type of land use, degree of disturbance, geomorphology, stream size, etc. (Johnson and Ryba 1992). Riparian reserve networks provide both a linkage and transitional habitat between hillslopes and upland terrestrial habitats and the aquatic habitats within stream channels (Gregory et al. 1991). In general, there is little debate or disagreement over the need to define riparian reserves in order to maintain riparian functions and ecological processes. There has been, however, substantial debate over the width of the riparian management zone, the extent and type of management activities that can occur within them, and the purposes for those activities.

Site-potential tree heights, extent of the 100-year floodplain, the outer edge of riparian vegetation, the outer extent of the inner gorge, or the extent of landslides and landslide-prone areas could all be used under PACFISH to establish an appropriate RHCA. Most of these criteria would still be considered to determine RCA widths in the proposed action, although a few modifications have been made. The outer extent of the inner gorge was dropped from the proposed approach because of the general absence of this channel/valley form within the SWIE. Since landslides and landslide-prone areas are not always located in a riparian areas, the Revision has also removed these areas from RCA designation. Instead, Forest-wide direction has been written to address protection of landslides and landslide-prone areas.

Table 1 provides a comparison of the approach to RHCA delineation, as previously defined by PACFISH/INFISH, to the approach for RCA delineation as outlined in the Revision LRMPs.

**Table 1. Comparison of PACFISH/INFISH Riparian Habitat Conservation Areas (RHCAs) and LRMP Revision Riparian Conservation Areas (RCAs)**

| Stream Type | PACFISH RHCAs | LRMP Revision RCAs |
|---|---|---|
| Fish-bearing Streams | Outer edge of active channel to top of inner gorge, or 100-year floodplain, or riparian vegetation, or two site-potential tree heights[1], or 300-foot slope distance, whichever is greatest. | I. Forested Streams* - *Perennial streams (and intermittent streams providing seasonal rearing and spawning habitat)* – In the absence of site-specific analysis, 300-foot slope distance OR Floodprone width or two site-potential tree heights, whichever is greatest OR Defined based on a site-specific analysis by a qualified specialist with expertise in the field of riparian function and ecological processes, with consideration of biophysical principles as identified below[2] |
| Permanently Flowing Non Fish-bearing Streams | Outer edges of active channel to top of inner gorge, or 100-year floodplain, or riparian vegetation, or one site-potential tree height[1], or 150-foot slope distance, whichever is greatest. | II. Forested Streams* - *Intermittent streams* – In the absence of site-specific analysis, 150-foot slope distance OR Floodprone width or one site-potential tree height, whichever is greatest OR Defined based on a site-specific analysis by a qualified specialist with expertise in the field of riparian function and ecological processes, with consideration of biophysical principles as identified below[2] |

| Stream Type | PACFISH RHCAs | LRMP Revision RCAs |
|---|---|---|
| Ponds, Lakes, Reservoirs, and Wetlands >1 Acre | The body of water or wetland and area to outer edges of riparian vegetation, or extent of seasonally saturated soil, or extent of moderately/highly unstable areas, or one site-potential tree height[1], or 150-foot slope distance from edge of maximum pool elevation of constructed ponds and reservoirs or edge of wetland, whichever is greatest. | III. Ponds, lakes, reservoirs, and wetlands*–<br>In the absence of site-specific analysis, 150-foot slope distance from high waterline<br>OR<br>Outer edge of seasonally saturated soils, outer edge of riparian vegetation, or one site-potential tree height, whichever is greatest<br>OR<br>Defined based on a site-specific analysis by a qualified specialist with expertise in the field of riparian function and ecological processes, with consideration of biophysical principles as identified below[2] |
| Seasonally Flowing or Intermittent Streams; Wetlands <1 Acre; Landslides & Landslide-Prone Areas | At a minimum, RHCA's must include: a). extent of landslides & landslide-prone areas; b). intermittent stream channel and area to top of inner gorge; c). intermittent stream channel or wetland and area to outer edge of riparian vegetation; d). key watersheds – area from edge of stream channel, wetland, landslide, or landslide-prone area to one site-potential tree[1] or 100-foot slope distance, whichever is greatest; e). non key watersheds – area from edge of stream channel, wetland, landslide, or landslide-prone area to one-half site-potential tree height[1] or 50-foot slope distance, whichever is greatest. | |

| Stream Type | PACFISH RHCAs | LRMP Revision RCAs |
|---|---|---|
| Non-forested<br>Rangeland Ecosystems | Permanently flowing fish-bearing and non fish-bearing streams - extent of 100-year floodplain. | IV. Non-Forested Streams*<br>*Perennial and intermittent streams –*<br>The extent of the flood prone width, or riparian vegetation, whichever is greatest<br>OR<br>Defined based on a site-specific analysis by a qualified specialist with expertise in the field of riparian function and ecological processes, with consideration of biophysical principles as identified below[2] |

***Note:** Sediment delivery distances vary based upon the combination of proposed management actions and the inherent site characteristics. Because sediment delivery distances may exceed the selected option, RCAs may need to be adjusted to avoid or minimize delivery to the associated water body under any option.

[1] See Attachment 6 for criteria for determining **Site-Potential Tree Heights.**

[2] **Site-specific analysis -** The determination of RCA widths must consider the various riparian functions and ecological processes that exert an influence on the adjacent aquatic and terrestrial environment. Integral to the success of proper management, is an understanding of riparian functions and ecological processes, and local knowledge of the site being managed. With field data in hand, design of an appropriate RCA width can focus on conservation of appropriately functioning processes and restoration of damaged processes of concern based on the existing conditions of the site, proposed activities, and issues at hand. Riparian functions and processes that should be considered during delineation of RCAs through site-specific analysis include (taken primarily from Spence et al, 1996):

- Stream Shading
- Large Woody Debris Recruitment
- Fine Organic Litter
- Bank Stabilization
- Sediment Control
- Nutrients and Other Dissolved Materials
- Riparian Microclimate and Productivity
- Wildlife Habitat
- Windthrow
- Importance of Small Streams
- Importance of Hillslope Steepness

**ATTACHMENT #5**

**Site- Potential Tree Heights for Use in Identifying RCAs**

A site-potential tree height, as defined in the LRMP Revision, is the height that a site tree, of a seral species, has or is expected to attain at an age of 200 years. This is consistent with the age used in ICBEMP. Stands with trees that are 200 years old are also considered as representing old forest conditions.

A site tree is a tree that has never experienced overstory competition or damage that would have reduced height growth during any period of its life. A seral tree species includes those trees species that become established and develop following a stand replacing event. These species tend to be longer lived than climax species, and normally represent the tallest trees that grow on a site.

When planning and implementing vegetation management projects distances equivalent to one or two site potential tree heights may be used to determine RCA boundaries provided a site visit has been completed. During the site visit, current conditions must be determined including the identification of the site's potential vegetation group (PVG). Table 1 shows site potential tree heights proposed for use on the Payette National Forest.

The data in the following table will be used for determining one and two site tree heights for identifying RCA widths for project planning and implementation. For more information refer to Appendix B in the LRMPs.

**Table 1. Site Potential Tree Heights by Potential Vegetation Group on the Payette National Forest (USDA Forest Service 2003b).**

| Potential Vegetation Group | Age | 1 Site Tree Height (feet) | 2 Site Tree Heights (feet) |
|---|---|---|---|
| 1 - Dry Ponderosa Pine/Xeric Douglas-fir | 200 | 120 | 240 |
| 2 - Warm Dry Douglas-fir/Moist Ponderosa Pine | 200 | 120 | 240 |
| 3 - Cool Moist Douglas-fir | 200 | 120 | 240 |
| 4 – Cool Dry Douglas-fir | 200 | 100 | 200 |
| 5 – Dry Grand Fir | 200 | 110 | 220 |
| 6 – Cool Moist Grand Fir | 200 | 120 | 240 |
| 7 – Cool Dry Subalpine Fir | 200 | 100 | 200 |
| 8 – Cool Moist Subalpine Fir | 200 | 110 | 220 |
| 9 – Hydric Subalpine Fir | 200 | 110 | 220 |
| 10 - Persistent Lodgepole Pine | * | 90 | 180 |
| 11 - High Elevation Subalpine Fir | 200 | 80 | 100 |

*In PVG 10, individual trees and stands normally do not achieve an average of 200 years. However, mature lodgepole pine site trees can achieve an average height of approximately 80 feet.

**ATTACHMENT #6**

**Table 1. Example LRMP Revision Direction for Regulating Activities within PACFISH RHCAs versus LRMP RCAs.**

| Original PACFISH/LRMP Opinion Standard | Corresponding LRMP Revision Direction |
|---|---|
| MM-4. For leaseable minerals, prohibit surface occupancy within RHCA for oil, gas, and geothermal exploration and development activities where contracts and leases do not already exist, unless there are no other options for location and RMOs can be attained and adverse effects to listed anadromous fish can be avoided. Adjust the operating plans of existing contracts to (1) eliminate impacts that prevent attainment of RMOs and (2) avoid adverse effects to listed anadromous fish. | Minerals Std. 3 - Common variety and leaseable mineral sources shall not be located and developed within RCAs. If no alternative exists, common variety and leaseable mineral sources shall be located and developed so that they do not degrade or retard attainment of other Forest Plan desired resource conditions and so that reclamation is feasible. |
| | Minerals Std. 4 - Mitigate degrading effects from locatable mining operations situated within RCAs by identifying reasonable locations for access, processing, and disposal facilities outside of RCAs, wherever possible. |
| | Minerals Std. 8- Locate new structures, support facilities, and roads outside RCAs. Where no alternative to siting facilities in RCAs exists, locate and construct the facilities in ways that avoid or minimize degrading effects to RCAs and streams, and adverse effects to TEPC species. Where no alternative to road construction in RCAs exists, keep roads to the minimum necessary for the approved mineral activity. Close, obliterate, and revegetate such roads if no longer required for mineral or other management activities. |
| | SWRA Stnd. 4 - Management actions will neither degrade nor retard attainment of properly functioning SWRA desired conditions, except: a) Where outweighed by demonstrable short- or long-term benefits to watershed resource conditions; or b) Where the Forest Service has limited authority (e.g., access roads, hydropower, etc.). In these cases, the Forest Service shall work with permittee(s) to minimize the degradation of watershed resource conditions. Use the MATRIX located in Appendix B to assist in determining compliance with this standard. |

| Original PACFISH/LRMP Opinion Standard | Corresponding LRMP Revision Direction |
|---|---|
| LH-2. Locate new hydroelectric ancillary facilities outside RHCA. For existing ancillary facilities inside the RHCA that are essential to proper management, provide recommendations to FERC to assure that the facilities will not prevent attainment of the RMOs and that adverse effects on listed anadromous fish are avoided. Where these objectives cannot be met, provide recommendations to FERC that such ancillary facilities should be relocated. Locate, operate, and maintain hydroelectric facilities that must be located in RHCA to avoid effects that would retard or prevent attainment of the RMOs and avoid adverse effects on listed anadromous fish. | TEPC Stnd.. 11 - The Federal Energy Regulatory Commission (FERC) should be notified that hydroelectric proposals in watersheds with TEPC fish species, and/or occupied TEPC plant habitat are inconsistent with Forest Plan management objectives when adverse effects can not be effectively avoided for plant species or avoided or minimized for TEPC fish species. |
| | TEPC Stnd. 12) - Where the authority to do so was retained, proposed or existing special use authorizations should be issued, re-issued, or amended upon expiration, only if adverse effects of the authorizations on TEPC species can be minimized. |
| | Lands Stnd. 7 - New authorized facilities shall be located outside of RCAs wherever possible. When new facilities must be located in RCAs, they shall be developed such that degrading effects to RCAs are mitigated, through avoidance or minimization. |
| | Lands Stnd. 11 - Use conditioning authority granted under Section 4(e) of the Federal Power Act to ensure that hydroelectric facilities that must be located within RCAs are located, operated, and maintained in a manner that mitigates degradation of Forest resources. |
| | Lands Stnd. 13 - Small hydropower facilities that are granted exemptions from licensing by the FERC shall be located, operated and maintained to mitigate degradation of Forest resources. |
| | Lands GL 9 - The Federal Energy Regulatory Commission (FERC) should be notified that hydroelectric proposals in watersheds with water quality concerns, important fisheries, and/or occupied TEPC plant habitat are inconsistent with Forest Plan management objectives when degrading effects cannot be effectively avoided or mitigated. |

| Original PACFISH/LRMP Opinion Standard | Corresponding LRMP Revision Direction |
|---|---|
| RA-2. Trees may be felled in Riparian Habitat Conservation Areas (RHCAs) when they pose a safety risk. Keep felled trees on site when needed to meeting woody debris objectives. | SWRA Stnd. 10 - Trees and snags that are felled within RCAs must be left unless determined not to be necessary for achieving SWRA desired conditions. When felled trees and snags are left in RCAs, leave them intact unless resource protection (e.g. insect infestation risk unacceptable) or public safety requires bucking trees into smaller pieces. |
| RA-4. Prohibit storage of fuels and other toxicants within RHCAs. Prohibit refueling within RHCAs unless there are no other alternatives. Refueling sites within a RHCA must be approved by the USFS or BLM and have an approved spill containment plan. | SWRA Stnd. 11 - Do not authorize storage of fuels and other toxicants or refueling within RCAs unless there are no other alternatives. Storage of fuels and other toxicants or refueling sites within RCAs shall be approved by the responsible official and have an approved spill containment plan commensurate with the amount of fuel. |
| 1995 LRMP Opinion Forest-wide Stnd. - Minimize risk of toxic fuel spills during transport through RHCAs by using alternative routes and all other possible precautions. | SWRA GL 11 - Transport hazardous materials on the Forest in accordance with 49 CFR 171 in order to reduce the risk of spills of toxic materials and fuels during transport through RCAs. |

**Table 2. Side-by-Side Comparison of PACFISH Direction and SWIE LRMP Revision Direction.**

| PACFISH Standard | Where Addressed in LRMP | Comments |
|---|---|---|
| TM-1. Prohibit timber harvest, including fuelwood cutting, in RHCAs, except as described below. Do not include RHCAs in the land base used to determine the Allowable Sale Quantity (ASQ), but any volume harvested can contribute to the timber sale program. | **Timber Goal 5 - Enhance public awareness about the value of retaining snags and coarse woody** debris, the need to protect riparian areas, and the importance of preventing accelerated soil erosion through methods such as information included with personal use permits (fuelwood, Christmas trees, etc.) and interpretive displays. | PACFISH Stnd. Fully Addressed: Timber Stnd. 4 - RCAs not suited for timber, no ASQ from RCAs. GL 5 & Stnd. 7 address fuelwood harvest. |
| | Timber Stnd. 4 - Lands within Riparian Conservation Areas (RCAs), determined after field review, will be identified as not suited for timber production. Wood products harvested within RCAs will not contribute to the ASQ. | |
| | Timber Stnd. 7 - No fuelwood harvest is allowed within 300 feet of perennial streams and 150 feet of intermittent streams unless management actions are designed in a manner that will not degrade riparian and related aquatic resources. Fuelwood harvest allowed within 300 feet of perennial streams and 150 feet of intermittent streams will be described in the annual fuelwood map and instructions. | |
| TM-1a. Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting in RHCAs only where present and future woody debris needs are met, where cutting would not retard or prevent attainment of other RMOs, and where adverse effects on listed anadromous fish can be avoided. For watersheds with listed salmon or designated critical habitat, complete Watershed Analysis prior to salvage cutting in RHCAS. | SWRA Stnd. 4 - Management actions will neither degrade nor retard attainment of properly functioning SWRA desired conditions, except: a) Where outweighed by demonstrable short- or long-term benefits to watershed resource conditions; or b) Where the Forest Service has limited authority (e.g., access roads, hydropower, etc.). In these cases, the Forest Service shall work with permittee(s) to minimize the degradation of watershed resource conditions. Use the MATRIX located in Appendix B to assist in determining compliance with this standard. | PACFISH Stnd. Partially Addressed: Standards address maintaining RMOs (SWRA desired conditions) when doing harvest in RCAs, but does not include trigger for completing watershed analysis prior to salvage cutting in RCAs in watersheds with listed fish & critical habitat. |
| | SWRA Stnd. 10 - Trees and snags that are felled within RCAs must be left unless determined not to be necessary for achieving SWRA desired conditions. When felled trees and snags are left in RCAs, leave them intact unless resource protection (e.g. insect infestation risk unacceptable) or public safety requires bucking trees into smaller pieces. | |
| | Timber Stnd. 7 - Previously Referenced under TM-1 above. | |
| | Timber Stnd. 8 - Salvage harvest in RCAs is allowed only where the wood products salvaged will not degrade or retard attainment of riparian, aquatic, hydrological, botanical, and terrestrial wildlife habitat desired conditions. | |

| PACFISH Standard | Where Addressed in LRMP | Comments |
|---|---|---|
| TM-1.b. Apply silvicultural practices for RHCA to acquire desired vegetation characteristics where needed to attain RMOs. Apply silvicultural practices in a manner that does not retard attainment of RMOs and that avoids adverse effects on listed anadromous fish. | TEPC Stnd. 6 - Management actions shall be designed to avoid or minimize adverse effects to listed species and their habitats. For listed fish species, use Appendix B for determining compliance with this standard. | PACFISH Stnd. Fully Addressed: Addresses maintaining RMOs and avoiding/minimizing risk to listed fish and critical habitat. Timber Stnd. 8 allows harvest to provide for SWRA desired conditions. |
| | SWRA Stnd. 4 - Previously referenced under TM-1a above. | |
| | SWRA Stnd. 10 - Previously referenced under TM-1a above. | |
| | Fire Mgmt. GL 6 - Direct ignition of prescribed fire in RCAs should not be used unless site/project scale effects analysis demonstrates that it would not degrade or retard attainment of SWRA desired conditions. Refer to SWRA Stnd. # 4 for exceptions. | |
| | Timber Stnd. 8 - Previously referenced under TM-1a above. | |
| GM-1. Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of RMOs or are likely to adversely affect listed anadromous fish. Suspend grazing if adjusting practices is not effective in meeting RMOs and avoiding adverse effects on listed anadromous fish. (GM-1 Cont. Next Page) | TEPC Stnd. 6 - Previously referenced under TM-1.b above. | PACFISH Stnd. Fully Addressed: Addresses maintaining RMOs (SWRA Stnd. 4; Range GLs 2, 8 and 9) and avoiding/ minimizing risk to listed fish and critical habitat (TEPC Stnd.d 6 and 25). Range Obj. 3, and GLs 2 and 5 address the need for adjusting facility location or grazing practices/use where causing degradation, but addressed as an Obj. and GL versus Stnd. |
| | TEPC Stnd. 25 - Mitigate, through avoidance, the adverse effects of livestock access or activities that may result in trampling of redds or disturbance of spawning or reproductive staging of ESA listed fish species. | |
| | SWRA Stnd. 4 - Previously referenced under TM-1a above. | |
| | Range Obj. 3 - During fine-scale analyses where rangeland facilities are identified as a potential concern or problem contributing to degrading resource conditions within the analysis area, identify rangeland facilities that are degrading resource conditions and prioritize opportunities to mitigate their effects or to initiate restoration of resource conditions. | |

| PACFISH Standard | Where Addressed in LRMP | Comments |
|---|---|---|
| **GM-1 (Cont.)** | **Range GL 2 -** In cattle allotments where riparian area restoration is an objective, grazing systems should be designed to incorporate the following parameters where appropriate: a) Provide residual vegetative cover (at least 6 inches of hydric vegetation) either through regrowth or rest treatments for at least 75 percent of the years in a rotation cycle. b) Reduce the duration of riparian area grazing periods where needed. Grazing period reduction may be especially needed in the fall where riparian deciduous woody species are an important riparian vegetation component. c) Design grazing periods to take advantage of favorable seasonal livestock dispersal behavior (examples: spring use of uplands, due to wet riparian conditions, late fall upland use, due to cold temperatures, poor dispersal during "hot" season). d) Incorporate sufficient growing season rest to provide good vigor, physiological needs, and regeneration of all riparian plants. e) Where deciduous trees and shrubs are important in the composition, modify the frequency of grazing periods, reduce the grazing duration, or reduce grazing intensity to levels that provide for recovery/maintenance of healthy diverse trees and shrubs. | (See Above) |
| | Range GL 5 - Where rangeland facilities or practices have been identified as potentially contributing to the degradation of water quality, aquatic species, or occupied sensitive or watch plant habitat, facilities and practices causing degradation should be considered for relocation, closure, or changes in management strategy, alteration, or discontinuance. | |
| | Range GL 8 - Sheep should be routed to avoid slopes with loose soil conditions, active gullies, and snowbank areas that have low productivity, soil puddling, and compaction conditions. | |
| | Range GL 9 - Season-long grazing practices should be discontinued where they preclude restoration of upland or riparian vegetation communities. | |

| PACFISH Standard | Where Addressed in LRMP | Comments |
|---|---|---|
| GM-2. Locate new livestock handling and/or management facilities outside of RHCA. For existing livestock handling facilities inside the RHCA, assure that facilities do not prevent attainment of RMOs or adversely affect listed anadromous fish. Relocate or close facilities where these objectives cannot be met. | TEPC Obj. 7 - During fine-scale analyses, identify practices or facilities that are adversely affecting TEPC species or their habitats, and prioritize opportunities to mitigate, through avoidance or minimization, adverse effects to TEPC species. | PACFISH Stnd. Fully Addressed: Range Stnd. 3 does not prohibit construction of new facilities within RCAs, but does require that the USFS demonstrate that any new facility would have to maintain beneficial uses and fish habitat. When combined with TEPC Stnd. 6 and SWRA Stnd. 4, USFS would have the ability to construct the new facility as long as it could be demonstrated that action avoids or minimizes adverse effects to TEPC species and did not degrade or retard attainment of properly functioning conditions. |
| | TEPC Stnd. 6 - Previously referenced under TM-1.b above. | |
| | SWRA Stnd. 4 - Previously referenced under TM-1a above. | |
| | Range Obj. 3 - Previously referenced under GM - 1 above. | |
| | Range Stnd. 3 - New water developments, corrals, and other handling or loading facilities shall not be located within RCAs, unless it can be demonstrated that these facilities maintain or allow for restoration of beneficial uses and native and desired non-native fish habitat. | |
| | Range GL 5 - Previously referenced under GM - 1 above. | |

| PACFISH Standard | Where Addressed in LRMP | Comments |
|---|---|---|
| GM-3. Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that will not retard or prevent attainment of RMOs or adversely affect listed anadromous fish. (GM-3 Cont. Next Page) | TEPC Stnd. 6 - Previously referenced under TM-1.b above. | PACFISH Standard Fully Addressed: Comprehensive list of Standards and GLs that mesh well to address this original standard. |
| | SWRA Stnd. 4 - Previously referenced under TM-1a above. | |
| | Range Stnd. 2 - Livestock trailing, bedding, watering, and other handling efforts shall be limited to those areas and times that maintain or allow for restoration of beneficial uses and native and desired non-native fish habitat. | |
| | Range Stnd. 3 - Previously referenced under GM-2 above. | |
| | Range Stnd. 4 - Livestock salting will be prohibited in RCAs. Sheep will be salted only at bed grounds. Salt will be placed in containers and moved with the sheep. | |
| | Range Stnd. 5 - Only one night/one time use of bed grounds is allowed. | |
| | Range Stnd. 7 - Only annual once-over sheep grazing will be allowed, with the exception of designated sheep driveways, travel routes, or where specifically authorized. | |
| | Range GL 4 - New stock driveways and trailing routes should be located outside of RCAs. Where driveways and trailing routes must pass through RCAs, they should be located and managed to minimize the extent and severity of degrading effects to SWRA and botanical resources. | |
| | Range GL 5 - Previously referenced under GM-1 above. | |
| | Range GL 8 - Previously referenced under GM-1 above. | |
| GM-4. Adjust wild horse and burro management to avoid impacts that prevent attainment of RMOs or adversely affect listed anadromous fish. | No relevant direction provided. | Not an issue within the Southwest Idaho Ecogroup, so no direction provided. |

Table 3. Example Describing Replacement of Mandatory PACFISH Standards with Non-Mandatory LRMP Revision Objectives.

| Original PACFISH Standard | Corresponding LRMP Revision Direction |
|---|---|
| RF-3.c. Closing and stabilizing or obliterating, and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential damage to listed anadromous fish and their designated critical habitat, and the ecological value of the riparian resources affected. | TEPC Objective 3 - Identify and reduce road-related effects on TEPC species and their habitats using the WARS and other appropriate methodologies. |
| | SWRA Objective 18 - Reduce road-related effects on soil productivity, water quality, and aquatic/riparian species and their habitats. Refer to WARS for mid-scale prioritization indicators to assist in fine and site/project scale restoration prioritization planning. |
| | Facilities & Roads Objective 6 - Identify roads and facilities that are not needed for land and resource management, and evaluate for disposal or decommissioning. |
| | Facilities & Roads Objective 11 - In the Forest's annual program of work, prioritize and schedule improvements to existing culverts, bridges, and other stream crossings to accommodate fish passage, 100 year flood flow, and bedload and debris transport. Include accomplishments in the biennial update of the WARS database. |
| | Facilities & Roads Objective 12 - During fine-scale analyses in areas where roads and facilities are identified as a potential concern or problem contributing to degradation of water quality, aquatic species or occupied sensitive or Watch plant habitat, evaluate and document where the contributing facilities are and prioritize opportunities to mitigate effects. |
| RF-4 - Construct new, and improve existing, culverts, bridges, and other stream crossings to accommodate a 100-year flood, including associated bedload and debris, where those improvements would/do pose a substantial risk to riparian conditions. Substantial risk improvements include those that do not meet design and operation maintenance criteria, or that have been shown to be less effective than designed for controlling erosion, or that retard attainment of RMOs, or that do not protect designated critical habitat from increased sedimentation. Base priority for upgrading on risks to listed anadromous fish and their designated critical habitat and the ecological value of the riparian resources affected. Construct and maintain crossings to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure. | SWRA Objective 14 - Prioritize improvements to existing culverts, bridges, and stream crossings identified for fish passage and associated bedload and debris problems, based on the WARS Map, fine-scale analyses and/or project-level priorities. |
| | Facilities & Roads Objective 11 - In the Forest's annual program of work, prioritize and schedule improvements to existing culverts, bridges, and other stream crossings to accommodate fish passage, 100 year flood flow, and bedload and debris transport. Include accomplishments in the biennial update of the WARS database. |
| | Facilities & Roads Standard 2 - To accommodate floods, including associated bedload and debris, new culverts, replacement culverts, and other stream crossings shall be designed to accommodate a 100-year flood recurrence interval unless site-specific analysis using calculated risk tools or another method, determines a more appropriate recurrence interval. |

| Original PACFISH Standard | Corresponding LRMP Revision Direction |
|---|---|
| FM-5 - Immediately establish an emergency team to develop a rehabilitation team to develop a rehabilitation treatment plan to attain RMOs and avoid adverse effects on listed anadromous fish whenever RHCAs are significantly damaged by a wildfire or a prescribed fire burning out of prescription. | Fire Management Guideline 2 - When prescribed fire or wildland fire use areas burn more severely than prescribed or anticipated, with the potential for detrimental soil disturbance or loss of soil-hydrologic function, appropriate personnel should complete a field evaluation to determine the need for any rehabilitation measures. |

**ATTACHMENT #7**
**MPC Descriptions and Commonly Applied Direction**

MPC management emphasis is further defined by Forest-wide and Management Area direction. For instance, almost all MPCs could feature vegetation management to some degree. The type and intensity of vegetation management that may occur in a given MPC area is reflected in its common set of standards and guidelines (described below by MPC), and may be further refined within an individual area to reflect that unique Management Area needs or concerns.

Each MPC emphasis is described below. Following the emphasis description, the standards and guidelines concerning management practices and intensity that apply to each MPC are stated. These MPC standards and guidelines have also been incorporated within direction found in each Management Area under the program area in which it would fall. For example, the road-related standards and guidelines stated under each MPC below are duplicated in each Management Area in which the MPC occurs under the "Facilities and Roads" Management Area direction.

**1.1 – Existing Wilderness -** This prescription applies to areas designated by Congress as Wilderness. The main management objective is preserving wilderness attributes, including natural appearance, natural integrity, opportunities for solitude, opportunities for primitive recreation, and identified special features. The area is managed to allow natural processes to prevail, with little or no evidence of human development. Current wilderness management plans and approved fire management plans provide specific direction for management activities.

*Standards*

- Management actions shall be designed and implemented in accordance with the Wilderness Management Plan.
- Mechanical vegetation treatments, including salvage harvest, are prohibited.
- Road construction and reconstruction may only occur where needed: a). To provide access related to reserved or outstanding rights, or b). To respond to statute or treaty.
- Fire suppression strategies and tactics shall be in accordance with the Wilderness Management Plan.

**1.2 – Recommended Wilderness -** This prescription applies to areas the Forest Service recommends for Wilderness designation. The primary management objective is to maintain wilderness attributes until Congress decides to designate the areas as wilderness or release them to some other form of management. Although these areas do not fall under the authority of the Wilderness Act, they are managed to maintain wilderness attributes where feasible, and to generally allow natural processes to prevail.

*Standards*

- Management actions, including wildland fire use and prescribed fire, must be designed and implemented in a manner that maintains wilderness values, as defined in the Wilderness Act.
- Mechanical vegetation treatments, including salvage harvest, are prohibited.
- Road construction and reconstruction may only occur where needed: a). To provide access related to reserved or outstanding rights, or b). To respond to statute or treaty.
- No new motorized or mechanical uses are allowed, except where these uses must be allowed in response to reserved or outstanding rights, statute, or treaty.
- Existing motorized or mechanical uses are allowed only if they do not lead to long-term adverse changes in wilderness values.

*Guidelines*

- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize tactics that minimize the impacts of suppression activities on wilderness values.

**2.1 – Wild and Scenic Rivers and Their Corridors -** This prescription applies to areas that have been Congressionally designated[9] as Wild, Scenic, or Recreational Rivers and their associated land corridors, which extend an average of 1/4 mile from each bank. Wild and Scenic Rivers and their corridors are managed to protect their free-flowing waters, outstandingly remarkable values (ORVs), and their classification status. A "Wild" classification is the most primitive or least developed. These rivers have essentially undeveloped corridors and are generally inaccessible except by trail. "Scenic" river corridors may have some development, and are accessible in places by roads. "Recreational" rivers are readily accessible by roads and often have development within their corridors.

*Guidelines*

- In Scenic or Recreational corridors, mechanical vegetation treatments, including salvage harvest, may be used as long as Outstandingly Remarkable Values (ORVs) are maintained within the river corridor.
- Prescribed fire and wildland fire use may be used in any river corridor as long as ORVs are maintained within the corridor.
- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize strategies and tactics that minimize the impacts of suppression activities on river classifications and ORVs.

**2.2 – Research Natural Areas -** This prescription applies to areas that have been administratively established as Research Natural Areas and that provide unique opportunities for research. Existing and proposed Research Natural Areas are managed to protect the unique values for which they were established. Management plans are developed for each area to provide guidance and protection of values.

*Standards*

- Mechanical vegetation treatments, salvage harvest, prescribed fire and wildland fire use may only be used to maintain vegetative values for which the areas were established, or to achieve other objectives that are consistent with the RNA establishment record or management plan.
- Road construction and reconstruction may only occur where needed: a). To provide access related to reserved or outstanding rights, or b). To respond to statute or treaty, or c). To maintain the values for which the RNA was established.

*Guidelines*

- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize fire suppression strategies and tactics that minimize impacts to values for which the RNA was established.

**3.1 – Passive Restoration and Maintenance of Aquatic, Terrestrial, and Hydrologic Resources -** This prescription is designed to minimize temporary-term risks and avoid short- and long-term risks from management actions to soil/hydrologic conditions and aquatic and terrestrial habitats. The objective of 3.1 is to keep management-related impacts from degrading existing conditions for TEPCs fish, wildlife, and botanical species, or 303(d) impaired water bodies. Low levels of management activities occur, and these activities are expected to have minimal and temporary degrading effects to soils, water quality, riparian areas, and aquatic and terrestrial habitats. Other uses and activities, such as salvage harvest or Wildland Fire Use, may occur and may have some temporary effects, provided they do not retard attainment of short- and long-term objectives for aquatic

[9] Eligible and/or suitable rivers are provided similar emphasis as listed above, but were not assigned to this MPC. Management direction is included in the Management Area where the river is located and in the Forest-wide direction.

and terrestrial habitat, or soil/hydrologic resources. Tools associated with this prescription—such as special order restrictions, operating plan adjustments, and prescribed fire—are typically of low intensity and designed to maintain existing conditions, primarily through ecological processes.

*Standards*

- Management actions, including salvage harvest, may only degrade aquatic, terrestrial, and watershed resource conditions in the temporary time period (up to 3 years), and must be designed to avoid resource degradation in the short term (3-15 years) and long term (greater than 15 years). Degrade and degradation are defined in the glossary.
- Wildland fire use and prescribed fire may only be used where they: a). Maintain or restore water quality needed to fully support beneficial uses and habitat for native and desired non-native fish species, or b). Maintain or restore habitat for native and desired non-native wildlife and plant species.
- Mechanical vegetative treatments, excluding salvage harvest, may only occur where: a). The responsible official determines that wildland fire use or prescribed fire would result in unreasonable risk to public safety and structures, investments, or undesirable resource affects; and b). They maintain or restore water quality needed to fully support beneficial uses and habitat for native and desired non-native fish species; or c). They maintain or restore habitat for native and desired non-native wildlife and plant species.
- Road construction and reconstruction may only occur where needed: a). To provide access related to reserved or outstanding rights, or b). To respond to statute or treaty, or c). To address immediate response situations where, if the action is not taken, unacceptable impacts to hydrologic, aquatic, riparian or terrestrial resources, or health and safety, would result.

*Guidelines*

- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize suppression strategies or tactics that minimize impacts on aquatic, terrestrial, or watershed resources.

**3.2 – Active Restoration and Maintenance of Aquatic, Terrestrial, and Hydrologic Resources -** This prescription is designed to minimize temporary- and short-term risks and avoid long-term risks from management actions to soil/hydrologic conditions and aquatic, botanical and terrestrial habitats. The objective of this prescription is to actively restore or maintain conditions for TEPCS fish, wildlife, and botanical species, or 303(d) impaired water bodies through a combination of management activities and natural processes. Management activities used to achieve this objective include watershed restoration, noxious weed treatments, and vegetative treatments that include prescribed fire, wildland fire use, and mechanical. Restoration is focused on those components of the ecosystem that are not functioning properly, or are outside the range of desired conditions, while maintenance helps to preserve those components that are functioning properly.

*Standards*

- Management actions, including salvage harvest, may only degrade aquatic, terrestrial, and watershed resource conditions in the temporary (up to 3 years) or short-term time periods, and must be designed to avoid resource degradation in the long term (greater than 15 years).
- Vegetative restoration treatments, including mechanical, wildland fire use and prescribed fire, may only occur where they: a). Maintain or restore water quality needed to fully support beneficial uses and habitat for native and desired non-native fish species; or b). Maintain or restore habitat for native and desired non-native wildlife and plant species; or c). Reduce risk of impacts from wildland fire to human life, structures, and investments.
- Road construction and reconstruction may only occur where needed: a). To provide access related to reserved or outstanding rights, or b). To respond to statute or treaty, or c). To support aquatic, terrestrial, and watershed restoration activities, or d). To address immediate response situations where, if the action is not taken, unacceptable impacts to hydrologic, aquatic, riparian or terrestrial resources, or health and safety, would result.

*Guidelines*

- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize suppression strategies or tactics that minimize impacts on aquatic, terrestrial, or watershed resources.

**4.1a – Undeveloped Recreation: Maintain Inventoried Roadless Areas -** This prescription applies to lands where dispersed and undeveloped recreation uses are the primary emphasis. Providing dispersed recreation opportunities in an inventoried roadless area is the primary objective. Both motorized and non-motorized recreation opportunities may be provided. Other resource uses are allowed to the extent that they do not compromise the roadless and undeveloped character of the IRA. The area has a predominantly natural-appearing environment, with slight evidence of the sights and sounds of people. Species habitat and recreational uses are generally compatible, although recreation uses may be adjusted to TEPCS species.

*Standards*

- Management actions allowed in MPC 4.1a—including wildland fire use, prescribed fire, and special use authorizations—must be designed and implemented in a manner that does not adversely compromise the area's roadless and undeveloped character in the temporary, short term, and long term. "Adversely compromise" means an action that results in the reduction of roadless or undeveloped acres within any specific IRA. Exceptions to this standard are actions related to the 4.1a Roads standard and Fire guideline, below.
- Road construction and reconstruction may only occur where needed: a). To provide access related to reserved or outstanding rights, or b). To respond to statute or treaty.

*Guidelines*

- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize tactics that minimize impacts of suppression activities on the roadless or undeveloped character of the area.

**4.1c – Undeveloped Recreation: Maintain Unroaded Character with Allowance for Restoration Activities -** This prescription applies to lands where dispersed recreation uses are the primary emphasis. Providing dispersed recreation opportunities in an unroaded landscape is the predominant objective. Both motorized and non-motorized recreation opportunities may be provided. Other resource uses are allowed to the extent that they do not compromise ROS settings. The area has a predominantly natural-appearing environment, with slight evidence of the sights and sounds of people. Species habitat and recreational uses are generally compatible, although recreation uses may be adjusted to protect TEPCS species.

*Standards*

- Management actions allowed in MPC 4.1c—including mechanical vegetation treatments, salvage harvest, wildland fire use, prescribed fire, special use authorizations, and road maintenance—must be designed and implemented in a manner that would be consistent with the unroaded landscape in the temporary, short term, and long term. "Adversely compromise" means an action that results in the reduction of roadless or undeveloped acres within any specific IRA. Exceptions to this standard are actions related to the 4.1c Roads standard and Fire guideline, below.
- Road construction and reconstruction may only occur where needed: a). To provide access related to reserved or outstanding rights, or b). To respond to statute or treaty.
- Outside IRAs, road construction and reconstruction may only occur where needed: a). To provide access related to reserved or outstanding rights, or b). To respond to statute or treaty, or c). To provide transportation systems that support accomplishment of Management Area Recreation Resource Opportunity Spectrum objectives.

*Guidelines*

- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize tactics that minimize impacts of suppression activities on the ROS settings in the area.

**4.2 – Roaded Recreation -** This prescription applies to lands where dispersed and developed recreation uses are the primary emphasis. A wide range of recreational activities and developments occurs. Facilities are maintained, and both motorized and non-motorized recreation opportunities may be provided. Multiple uses such as timber harvest and grazing are allowed to the extent that they do not compromise recreation resource objectives. Human use and presence are generally obvious. The area has a predominantly natural-appearing environment, with moderate evidence of the sights and sounds of people. Generally, a mix of mechanical and fire activities are used to treat vegetation to achieve desired conditions for recreation settings and developments, and to reduce the risk of uncharacteristic vegetative damage or loss from insects, diseases, and fire.

*Standards*

- Vegetation management actions—including wildland fire use, prescribed fire, and mechanical treatments—may be used to maintain or restore desired vegetation and fuel conditions provided they do not prevent achievement of recreation resource objectives.

*Guidelines*

- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize strategies or tactics that minimize impacts to recreation developments and investments.

**5.1 – Restoration and Maintenance Emphasis within Forested Landscapes -** This prescription applies to lands that are predominantly (> 50%) forested. Emphasis is on restoring or maintaining vegetation within desired conditions in order to provide a diversity of habitats, reduced risk from disturbance events, and sustainable resources for human use. Commodity production is an outcome of restoring or maintaining the resilience of forested vegetation to disturbance events; achievement of timber growth and yield is not the primary purpose. The full range of treatment activities may be used. Restoration occurs through management activities and natural processes. Combinations of mechanical and fire treatments are used to restore forested areas while maintaining or improving resources such as soils, water quality, fish and wildlife habitat, and recreation settings. The risk of temporary and short-term degradation to the environment is minimized, but impacts may occur within acceptable limits as resources are managed to achieve long-term goals and objectives.

*Guidelines*

- The full range of treatment activities may be used to restore and maintain desired vegetation and fuel conditions. The available vegetation treatment activities include wildland fire use. Salvage harvest may also occur.
- Road construction and reconstruction may occur where needed: a). To provide access related to reserved or outstanding rights, or b). To respond to statute or treaty, or c). To achieve restoration and maintenance objectives for vegetation, water quality, aquatic habitat, or terrestrial habitat, or d). To support management actions taken to reduce wildfire risks in wildland-urban interface areas; or e). To meet access and travel management objectives.
- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize tactics that minimize impacts to habitats, developments, and investments.

**5.2 – Commodity Production Emphasis within Forested Landscapes -** This prescription applies to lands that are predominantly forested. Emphasis is on achieving sustainable resource conditions that support commodity outputs, particularly timber production in forested settings, and forage production in non-forested settings. Management activities are also designed to maintain and restore forest ecosystem health to reduce potential for long-term impacts from uncharacteristic disturbance events. Goods and services are provided within the productive capacity of the land, and may or may not fully meet demand. Mitigation activities are an important element of project design. Forested landscapes range in appearance from near natural to altered where management activities are evident.

*Standards*

- Wildland fire use is prohibited.

*Guidelines*

- Prescribed fire may be used to: a). Maintain or restore desired vegetative conditions on unsuited timberlands; or b). Maintain or restore desired fuel conditions for all vegetation types; or c). Maintain desired vegetative conditions on suited timberlands within PVGs 2 through 10.
- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize tactics that minimize impacts to developments and investments.

**6.1 – Restoration and Maintenance Emphasis within Shrubland and Grassland Landscapes -** This prescription applies to lands that are predominantly (> 50%) shrubland and grassland. Emphasis is on restoring and maintaining. vegetation within desired conditions in order to provide a diversity of habitats, reduced risk from disturbance events, and sustainable resources for human use. The full range of treatment activities may be used. Restoration occurs through management activities and natural processes. Combinations of mechanical and fire treatments are used to restore shrubland and grassland areas while maintaining or improving resources such as soils, water quality, fish and wildlife habitat, and recreation settings. The risk of temporary and short-term degrading effects to the environment are minimized, but impacts may occur within acceptable limits as resources are managed to achieve long-term goals and objectives.

*Guidelines*

- The full range of treatment activities may be used to restore and maintain desired vegetation and fuel conditions. The available vegetation treatment activities include wildland fire use. Salvage harvest may also occur.
- Road construction and reconstruction may occur where needed: a). To provide access related to reserved or outstanding rights, or b). To respond to statute or treaty, or c). To achieve restoration and maintenance objectives for vegetation, water quality, aquatic habitat, or terrestrial habitat, or d). To support management actions taken to reduce wildfire risks in wildland-urban interface areas; or e). To meet access and travel management objectives.
- The full range of fire suppression strategies may be used to suppress wildfires. Emphasize tactics that minimize impacts to habitats, developments, and investments.

**ATTACHMENT #8**
**Comparison Demonstrating Increasing Flexibility by MPC Risk Category**

The following is an example of how MPC direction becomes more flexible, resulting in increased potential of adverse effects to listed fish species by MPC risk class in relation to allowances for mechanical vegetation treatment*:*

*Low Risk style MPC Standard* - For MPC 3.1, mechanical vegetative treatments, excluding salvage harvest, may only occur where: a) The responsible official determines that wildland fire use or prescribed fire would result in unreasonable risk to public safety and structures, investments, or undesirable resource affects; and, b) They maintain or restore water quality needed to fully support beneficial uses and habitat for native and desired non-native fish species; or c) They maintain or restore habitat for native and desired non-native wildlife and plant species.

*Moderate Risk style MPC Standard* - For MPC 3.2, vegetative restoration treatments, including mechanical, wildland fire use and prescribed fire, may only occur where they: a) Maintain or restore water quality needed to fully support beneficial uses and habitat for native and desired non-native fish species; or b) Maintain or restore habitat for native and desired non-native wildlife and plant species; or c) Reduce risk of impacts from wildland fire to human life, structures, and investments.

*High Risk style MPC Standard* - For MPC 4.2, vegetation management actions, including wildland fire use, prescribed fire, and mechanical treatments may be used to maintain or restore desired vegetation and fuel conditions provided they do not prevent achievement of recreation resource objectives.

**ATTACHMENT #9**
**Risk Associated with Predicted Level of Activity**
**(Excerpted from LRMP BA, Chapter VI [USDA 2003e])**

For this assessment, risks and threats have been assessed further at the subbasin scale. Risks are based on the potential amount of activity, while threats are associated with typical effects associated with an activity after application of forest-wide and MPC management direction. A more detailed discussion of how risks and threats are addressed can be found in the methodology (BA, Chapter VI, Fisheries, *Effects Analysis, Effects Approach and Methodology*).

## A. Rangeland Resources

Forest-wide and MPC management direction provide a high level of protection to listed fish species and critical habitat. However, some threats still remain to listed fish and their proposed or designated critical habitat. These include threats from disturbance and localized impacts to riparian vegetation, stream banks, channel width, and pools (BA, Chapter VI, Fisheries, *Effects Analysis, Reduction in Threats – Forestwide and MPC Direction*).

There are generally three accepted grazing principles that affect plant physiology and succession. They are grazing frequency, intensity, and timing. Therefore, plant physiology, ecology, and response to grazing are key aspects to determining the effects of livestock grazing on rangeland vegetation and therefore on listed fish species and critical habitat. The two grazing management approaches group MPCs with similar management direction for these three livestock grazing principles as follows.

> *MPCs where Livestock Grazing is Limited* (MPCs: 1.1, 1.2, 2.1, 2.4, 3.1, 3.2, 4.3) - In general, these MPCs are more constraining on the timing, frequency, and intensity of livestock use thereby affording more temporary and short-term threat reduction in moving the rangeland vegetation towards its HRV. There is less temporary or short-term risk of loss of vegetation, soil compaction, sedimentation, nutrient loading, loss of bank stability, and loss or disturbance of aquatic habitat. Also, the rate of recovery for vegetation, soil, watershed concerns, riparian resources, and aquatic habitat and subpopulations would be quicker.
>
> *MPCs where Livestock Grazing Management Practices are more Balanced* (MPCs 4.1, 4.2, 5.1, 5.2, 6.1, 6.2)- In general, these MPCs are less constraining on the timing, frequency, and intensity of livestock use thereby increasing temporary and short-term threats in moving the rangeland vegetation towards its HRV. There are more temporary and short-term risks of loss of vegetation, soil compaction, sedimentation, nutrient loading, loss of bank stability and loss or disturbance of aquatic habitat. Also, the rate of recovery for vegetation, soil, watershed concerns, riparian resources, and aquatic habitat and subpopulations is not expected to occur as quick as it would be for the limited approach.

These two grazing management systems have differing temporary and short-term threats based on their effects of grazing on rangeland vegetation and riparian functions and ecological processes. If the rangeland vegetation is managed toward the historical range of variability, it should provide favorable conditions for most hydrologic and watershed processes. With the addition of proper timing of grazing seasons and managing livestock to protect stream banks and other riparian components, unfavorable conditions to aquatic resources can be kept to an acceptable minimum. Short-term recovery usually occurs only through implementation of limited management grazing direction. Both limited and balanced grazing direction will provide for long-term recovery, however, limited grazing direction should provide for a higher degree of long-term recovery.

Subbasins that have the highest potential for threats from grazing based on suitable acres and a majority in a "balanced" grazing system include: Brownlee Reservoir, Payette, Boise-Mores, Middle Fork Payette, South Fork Payette, N.F/Middle Fork Boise, South Fork Boise, Weiser, and Little Salmon River. Subbasins that have lower potential for grazing threats based on suitable acres and a majority in "limited" grazing include: Hell Canyon, North Fork Payette, Lower Salmon,

South Fork Salmon, Upper Salmon, Middle Salmon Chamberlain, Lower Middle Fork Salmon, and Upper Middle Fork Salmon.

## B. Recreation Resources

Across the Ecogroup recreation use is likely to increase, due largely to expanding population bases. Management actions linked to overlying MPCs would likely only shift the distribution of recreation pressure and usage. Although the extent and locations of these resultant shifts are difficult to predict due to the highly variable nature of the factors that affect these shifts, some shifts are evident. Subbasins that have the most road miles accessible to the public would probably present somewhat higher levels of motorized recreation opportunity and use, but would also allow greater dispersal of recreation use. In contrast, subbasins with the fewest open road miles would tend to further concentrate use within existing recreation corridors and areas immediately adjacent to them.

Recreation impacts vary between subbasins. Four metrics were examined across the lands administered within the Ecogroup to look at potential impacts from recreational activities. These metrics included: (1) the number and type of recreational sites within RCAs; (2) the number of more impactive recreational sites; (3) the density of trails within RCAs; and (4) the density of roads within RCAs. It was assumed that as recreational facilities and trails within RCAs increase, the potential for impacts to aquatic and riparian resources would also increase. Information on the number of dispersed recreation sites was not available across the Ecogroup. Road density within RCAs was instead used as a course filter for dispersed sites. It was assumed with more roads in RCAs, there would be more dispersed sites and unauthorized trails.

It should be recognized that this is a coarse assessment of the level of recreational activity. It is fully realized that individual recreational sites or activities that have significant effects to listed fish species and critical habitat occur in the moderate and low activity subbasins. This categorization also does not take into account recreational activities on other private, state, or federal lands within each subbasin. These activities will be considered with other actions in the cumulative effects.

### Table 1. Existing Recreational Use In Each Subbasin By Level Of Activity

| High Activity Subbasins | Moderate Activity Subbasins | Low Activity Subbasins |
|---|---|---|
| Big Wood River | Brownlee Reservoir | C.J. Strike Reservoir |
| Boise-Morees | Lake Walcott | Camas Creek |
| Middle Fork Payette | **Little Salmon River** | Curlew Valley |
| Middle Snake | Little Wood River | Goose Creek |
| North/Middle Fork Boise | **Lower Middle Fork Salmon** | **Hells Canyon** |

| High Activity Subbasins | Moderate Activity Subbasins | Low Activity Subbasins |
|---|---|---|
| North Fork Payette | **Lower Salmon** | Lower Boise |
| South Fork Boise | **Middle Salmon-Chamberlain** | Northern Great Salt Lake |
| South Fork Payette | Payette | Salmon Falls Creek |
| **South Fork Salmon** | Raft River | **Upper Middle Fork Salmon** |
| **Upper Salmon** | Weiser River | |

*** Subbasins in bold are accesible to anadromous fish.**

## Table 2. Metrics Used To Determine Levels Of Recreational Use

| Metrics | High Activity Subbasins[1] | Moderate Activity Subbasins[1] | Low Activity Subbasins[1] |
|---|---|---|---|
| Avg. # Recreation Sites in RCAs | 13 | 4 | <1 |
| Avg. # Large[2] Recreation Sites in RCAs | 5 | 2 | <1 |
| Avg. Density Trails in RCAs (mi./sq.mi.) | 1.04 | 0.54 | 0.36 |
| Avg. Density Roads in RCAs (mi./sq.mi.) | 3.98 | 4.77 | 2.48 |

[1] Values represent the average number of units from subbasin risk categories in Table 1.

[2] Large recreation sites are defined as campgrounds, resorts, organizational camps, etc.

## C. Threshold of Concern (Includes Timberland/Vegetation Resources/Roads/Fire Use Related Activities)

Cumulative watershed effects (CWE) may have severe impacts on the condition of aquatic and associated surrounding terrestrial ecosystems (Quigley and Arbelbide 1997, Reid 1993). Aquatic systems and associated water quality are easily affected by management activities on surrounding lands (Spence et al. 1996, Reeves et al. 1995, Reid 1993, Megahan et al. 1992). For these reasons, RCAs receive special management direction (refer to Forest Plan Appendix B and Chapter III, Description of the Federal Action, *ACS Component 3, Riparian Conservation Areas* and Chapter VI, Fisheries, *Effects Analysis, Aquatic Conservation Strategy Role in Addressing Threats to Listed Fish Species* of this BA) that greatly reduces the potential for direct impacts from those activities. CWE are those impacts accruing from more than one activity (direct effect within or adjacent to RCAs and/or indirect and dispersed upslope from RCAs). They can occur because of a single type of influence on an environmental parameter, complementary influences, cascading influences, and interdependent influences (Reid 1993). Some of the kinds of CWE that may occur in aquatic systems as a result of cumulative watershed disturbances include: sedimentation, gravel embeddedness, pool filling, aggradation, bank cutting, down cutting, scouring, canopy reduction, temperature alterations, changes in peak flows, loss of aquatic habitat (spawning/rearing and overwintering), changes in species composition, decrease in stream

biodiversity, etc. (Quigley and Arbelbide 1997, Spence et al. 1996 and Reid 1993).

While CWE can occur and may be detected at multiple scales, they are most discernable at the site and fine-scale where they occur. Sedimentation due to high densities of roads in RCAs or loss of large woody debris from extensive harvest within RCAs is detectable at the site and fine-scale. Effects at larger scales become increasingly diluted from the contribution from a larger drainage area. This is why most CWE for site-specific project proposals in the Ecogroup Forests are analyzed at finer scales, such as those used for the Matrix of Pathways and Watershed Condition Indicators described in detail in Appendix B of the Forest Plans. At the site-specific project scale, the Ecogroup Forests assess CWE and modify proposed actions to reduce negative effects associated with listed and non-listed fish species, their habitats, and other SWRA resources. CWE may be analyzed at larger scales but proposed activities are only constrained at the site-specific project proposal.

For Forest Plan Revision (a large mid-scale programmatic plan), a CWE method was needed that integrated with the Forest Vegetation Model (SPECTRUM) to assist in identifying potential remaining threats associated with a full variety of forest vegetation management activities (mechanical harvest, road and fire use related activities). The CWE method also needed to be reproducible over large areas, spatially and temporally adaptable, and consistent. While most threats from each forest vegetation management activity (mechanical, roads and fire use) are addressed by management direction (Forest-wide, MPC, etc.), they still pose cumulative temporary and short-term risks to listed fish species and critical habitat for two reasons. First, as more treatments are applied, more protective measures are needed to mitigate potential negative effects. It is assumed that as more protective measures are applied, the more risk there is of impacts from mitigation measures, or of impacts from mitigation measures not being implemented correctly. Second, it is also assumed that the more management activities applied to a specific location, the more the risk there is of negative effects from those management disturbances, regardless of mitigation measures.

This analysis adapted a CWE accounting system described in (Menning et al 1996), as a method to estimate (multiple subbasin-scale CWE, with effects averaged by two and five decadal periods), potential overall watershed response (watershed and riparian functions and ecological processes) from forest vegetation management activities (mechanical, fire use, and road related activities) associated with achieving the forest vegetation desired conditions. This system assisted in: (1) spatially displaying CWE at the sub-basin-scale; (2) temporally displaying potential effects averaged by decade; (3) accounting quantitatively for potential levels of CWE (index of potential forest vegetation management intensity); and 4) identifying subbasins with high risks (Threshold of Concern (TOC) exceedence – explained more fully below) from forest vegetation management activities. The CWE method estimated the amount, type, and timing of forest vegetation management activities for each subbasin.

This CWE method was designed to provide a screening tool for identifying subbasins with the potential for concentrated forest vegetation management activities and associated risks to listed fish

species, their habitats, and other SWRA resources. The method is similar (but less specificity based on the large mid-scale programmatic nature of Forest Plan Revision) in concept to other models such as the Equivalent Roaded Area (ERA), Equivalent Clearcut Area (ECA), BOISED Sediment Yield Model, and the Cumulative Watershed Effects Process for the State of Idaho. These various models have been used throughout the National Forests (at finer scales) and are similar in that they account for a variety of management activities correlated to a common unit, and measure effects from those activities on watershed functions and aquatic systems.

The CWE method incorporated and integrated the outputs/activities of the Forest Vegetation Spectrum Model (described in FEIS - Appendix B, "*Forest Vegetation Modeling Desired Conditions*", and Chapter 3, *Vegetation Diversity*) and spatially and temporally displayed the SPECTRUM outputs/activities at the subbasin scale using the RELM model (described in FEIS - Appendix B "Forest Vegetation Modeling Desired Conditions"). The SPECTRUM model estimated the amount and timing of vegetation management activities based on a complex data set, including the eleven potential vegetation groups (PVG), current vegetation conditions (early successional, late seral, etc), MPC assignment, and desired conditions of forest vegetation. Arrays of type and amount of forest vegetation management activities were then summed up by the SPECTRUM model per Forest and displayed as decadal averages. This level of detail was not sufficient to identify CWE at a spatial scale and associated risks to listed fish species, their habitats, and other SWRA resources. In order to improve the CWE method, the RELM model was used to spatially disaggregate the SPECTRUM outputs/ activities to individual subbasins over time. This information was then averaged for the first two and the first five decades. These decadal averages were used to coincide with the fish viability assessments at 15- and 50-year intervals. Average decadal amounts are assumed to provide good implementation estimates of the forest vegetation resource programs. The RELM model prorated the SPECTRUM outputs/activities to each subbasin based on the individual subbasin's PVGs, current vegetation conditions (early successional, late seral etc), MPC assignments, and desired conditions for forest vegetation.

A CWE methodology for the large mid-scale programmatic plan was developed that measured each watershed-disturbing activity in a common currency - equivalent replacement treatment acres (ERT). The disturbance associated with an acre of mechanically harvested clearcut served as the common denominator. This acre of mechanical clearcut harvest was given the unit of measure ERT. All other forest vegetation management activities are measured in ERT units relative to one ERT associated with one acre of mechanical clearcut. Each watershed-disturbing activity has a coefficient based upon the type of forest vegetation management activity. These coefficients were developed based on the relative differences in basic erosion rates identified in the BOISED Sediment Yield - Users Guide, and through personal communications with Charlie Luce, research hydrologist, Rocky Mountain Research Station, Boise, Idaho. An acre of new road construction is identified as the most amount of disturbance per unit area compared to other forest vegetation management actions (USDA Forest Service 1991). Within each subbasin, the total number of acres and timing of forest vegetation management activities were determined. Next, the total acres of each kind of activity were calculated by decade. This process was repeated for each activity in a subbasin. These products were then summed and divided by the total number of acres in a

subbasin. The result was a net percent of ERT by decade (two and five decade averages) for each subbasin.

This CWE method includes several components. **First,** as described above, is an assessment of the ERT percentage for each subbasin from estimated forest vegetation management activities associated with achieving desired conditions. **Second,** each subbasin is evaluated based on its susceptibility to disturbance from an accumulation of management activities using the composite subbasin vulnerability rating (high, moderate, and low), similar to the subwatershed vulnerability described in Appendix I of this BA. This inherent sensitivity index was calculated based on the individual prorating of the associated subwatershed vulnerability ratings within each subbasin. **Third**, each subbasin has a determination of its relative aquatic and water quality value (high, moderate, and low) based on selected beneficial use parameters identified below that were also identified and described in Chapter III, Description of the Federal Action, *Aquatic Conservation Strategy, Component 7, Subwatershed Restoration Type and Restoration Prioritization* of this BA.

**Fourth**, the subbasin's vulnerability and, relative water quality and aquatic values were then converted to one of three sensitivity classes that were assigned percent ERT thresholds per decade. The sensitivity class values for the subbasins are as follows: sensitivity class I = 6 percent ERT, sensitivity class II = 8 percent ERT, and sensitivity class III = 13 percent ERT (see criteria identified later in this document). For example, if a subbasin is 500,000 acres in size, with a sensitivity class of 6 percent, an estimated 30,000 (500,000 x .06) ERT acres/decade of vegetation management disturbance may occur without significant CWE.

Criteria used to determine a subwatersheds sensitivity class percent ERT value:

Sensitivity Class I percent ERT value of 6.00 percent

a. ACS priority subwatersheds
b. TMDL's within subwatershed
c. Strong populations of bull trout or anadromous (not including migratory habitat for bull trout or anadromous) and isolated local populations of bull trout within the subwatershed.

Sensitivity Class II percent ERT value of 8.00 percent

a. Designated Critical Habitat of Sockeye and Chinook salmon within subwatershed
b. Presence of any listed fish species (including migratory)
c. Presence of listed 303(d) water quality limited water bodies
d. High subwatershed vulnerability rating

Sensitivity III Class percent ERT value of 13.0 percent

a. All remaining subwatersheds

These ERT acres would be an accumulation of a variety of vegetation management activities (mechanical harvest, fire use, and road related activities) throughout the subbasin. A subbasin with a low vulnerability rating, and a low water quality and aquatic value or a sensitivity class III, may have a higher percent ERT threshold of 13 percent. In other words, because the subbasin is relatively resistant

to disturbance and has lower water quality and aquatic values, more land can be disturbed without exceeding the ERT percent threshold. In contrast, a subbasin with high vulnerability and high water quality and aquatic values is assigned a percent ERT of 6 percent. As a subbasin's sensitivity class ERT percent threshold is approached or exceeded, the risk of negative effects to listed fish species, their habitats, and other SWRA resources increases. The Threshold of Concern (TOC) is used to represent the percent of the sensitivity class's ERT percent that is consumed. In the above example, a 50 percent TOC represents 15,000 ERT acres consumed or one-half of the sensitivity class value, equaling 3 percent ERT for the subbasin.

**Fifth**, the CWE method calculated the TOC (percent ERT consumed for the subbasin) for each subbasin as a result of the forest vegetation management activities for both the two and five decadal averages. In other words, a subbasin with a sensitivity class I (6 percent ERT) may have been determined to have a 50 percent TOC (or 3 percent subbasin ERT) for the two decadal average and 30 percent TOC (or 1.8 percent subbasin ERT) for the five decadal average, equating to a low risk of negative impacts to listed fish species, their habitats, and other SWRA resources for both the two and five decadal averages. In contrast, a subbasin with a sensitivity class I (6 percent ERT) may have been determined to have a 150 percent TOC (or 9 percent subbasin ERT) for the two decadal average and 60 percent TOC (or 3.6 percent subbasin ERT) for the five decadal average. This equates to a high risk of negative impacts to listed fish species, their habitats, and other SWRA resources for the two decadal average and a lowering to a low to moderate risk for the five decadal average. **Sixth**, the CWE associated with the forest vegetation management activities and their associated TOC values and associated risks/threats are further described for each subbasin in Chapter VI, Fisheries, *Effects Analysis, Reduction in Threats, MA – Direction, Individual Subbasin Analyses* of the BA.

As a quantitative accounting method, the CWE method was used to determine additional risk or effect from a mix of forest vegetation management outputs/activities over two time spans for multiple subbasin as if the Federal Action were implemented. Although the CWE method is imperfect, it is a useful method for evaluating the effects for forest vegetation management strategies for a number of reasons. First the CWE method provides a quantitative accounting and analysis process. The SPECTRUM and RELM models account for most of the forest vegetation management outputs/activities, and the outputs can be used to estimate relative risks/effects dispersed in time and space. Second, the CWE is similar to the correlations with some ecological measures of instream effects (Spence et al. 1996, McGurk and Fong 1995, Reid 1993). Third, there is some theoretical basis for linking CWE to measures of risks/effects. Fourth, the CWE methodology has greater considerations of the affects of fire use than do other models and is similar to other commonly used models used at finer scales. Fifth, for this size analysis (a large mid-scale programmatic plan, other assessments were either a great deal coarser (no spatial or temporal scale) or non-existent.

For a list of assumptions related to the CWE model, see page VI-166 of the LMRP BA. The following discussion explains how levels of risk for TOC was applied to each subbasin.

The Forest-wide management direction provides a high degree of protection to soil-hydrologic conditions, riparian functions and ecological processes, and aquatic habitats from management actions associated with timberland resources, forest vegetation management and related road and fire use

management (refer to BA, Chapter III, Description of the Federal Action, *The Federal Action and its Relationship to Factors of Decline for list Fish Species and Long-Term ACS, ACS Component 4, Direction Common to All Resources, Timberland/ Vegetation Resources (and Road and Fire Use Related Activities), Facilities/Roads*). In particular, TEPC Standards 1, 4, and 6, TEPC Guideline 1, and SWRA Standards 1 and 4 greatly reduce the potential for negative effects.

The lack of suited timber base in either RCAs or High Hazard Landslide Prone areas further reduces the risk of management actions contributing to any negative effects to listed fish and critical habitat. The MPCs that allow for suited timber base (4.2, 5.1, 5.2, 6.1, and 6.2) have the highest potential for mechanical harvest and road construction and therefore a higher potential for negative effects to listed fish species, their habitats, and other SWRA resources. MPC 3.2 and MPC 4.1c (outside of the inventoried roadless area) do not have any suited timber base but allow for some mechanical vegetation thinning and fire use, and therefore have low potential for negative effects. Other MPCs without any suited timber base (1.1, 1.2, 2.1, 2.2, 3.1, 4.1a, 4.1b, 4.1c inside inventoried roadless areas, and 4.3) have none to very low potential for negative effects listed fish species, their habitats, and other SWRA resources.

Additional discussion on the acreage of suited timber base within each subbasin will also be used for effects discussions. This is important in that Thresholds of Concern (TOCs) may be similar among subbasins but the acreage of suited timber base may vary significantly. In one subbasin the TOC may be the result of mostly mechanical harvest on suited timber base and related road activities. In another subbasin the percent of TOC consumed may be the result of reintroduction of fire to reduce fuels and lessen the vegetation density, which requires no related road activities.

Desired condition for forest vegetation in the Federal Action moves vegetation toward the historical range of variability to ensure resilient ecosystems using a variety of management actions or vegetation manipulation tools (refer to FEIS Appendix B, Forested Vegetation Analysis Process, for a more complete description). Subbasins with less than 100 percent TOC represent a low risk to listed fish species and critical habitat. The amounts of forest vegetation management activities are assimilated within the subbasin with very low risks for negative effects. The alternatives and subbasins that are approaching or exceeding 100 percent TOC would have an increasing concern for temporary and short-term risks to listed fish species, their habitats and other SWRA resources. These potential risks would be mitigated greatly by management requirements designed into the Federal Action; however, potential concerns of risks would still exist and vary by subbasin.

## D. Fire Management

Opinions on impacts from wildfire and management treatments to limit the severity of wildfire are diverse. Some believe that large, severe wildfires pose additional risks to threatened species, and therefore, an aggressive program of active management is needed to reduce those risks (Williams 1998, Babbitt 1999 Haftl 1999, Snyder, 2001). Others have argued that populations are resilient enough to withstand wildfire effects and those management actions to reduce wildfire threats pose even a greater

risk than the wildfire itself (Anderson 1998, DellaSala and Frost 2001). The effects of wildfires are complex and contingent on a variety of factors. This is why vegetation management to reduce wildfire risks is complex and controversial.

The following is intended to provide the basis for the effects methodology and assumptions made.

The Spectrum model analysis provided only a general assessment of potential risks and threats from fire management activities at the subbasin scale. It was not detailed enough to evaluate potential risks/threats at the subwatershed scale. Therefore, mechanical and fire use, based on MPCs, were instead used to evaluate risks from management activities.

Because lethal fires occurring within highly vulnerable subwatersheds can be detrimental to listed fish species, risks from uncharacteristically lethal fires will be tracked in this analysis. Potential threats to listed fish species and critical habitat were analyzed by comparing the MPCs (3.2, 4.1 c, 4.2, 4.3, 5.1, 5.2, 6.1, and 6.2) that have a high emphasis and more tools available to treat subwatersheds with high and extreme risks from uncharacteristic wildfire to MPCs (1.1, 1.2, 2.0, 2.1, 2.2, 3.1, 4.1a, and 4.1b) that have a limited emphasis and fewer tools. Acres of high treatment emphasis were compared to acres of limited treatment emphasis for each subbasin.

High and limited emphasis MPCs in subwatersheds with high and extreme risk from uncharacteristic wildfire were also overlaid with the population status (e.g., strong, depressed, and isolated local population) of bull and steelhead trout and chinook salmon. This was done to evaluate the risks and or benefits from management treatments. It also assessed the risks from limited treatments that would maintain a high risk from uncharacteristic wildfires.

Limited treatment MPCs were further evaluated by comparing the acres of MPC (2.1, 2.2, and 3.1) that allowed fire and mechanical treatments vs. the MPCs (1.1, 1.2, 4.1a, and 4.1b) that only allow prescribed fire. Although management direction would help to minimize many effects, it's believed that potential impacts to listed fish species and critical habitat are greatest where more intensive management tools are applied.

*Key Assumptions*

Assumption 1 - The risk of uncharacteristic wildfire in short-term is greater than the risk of mechanical and prescribed fire to treat vegetation in some situation where depressed or isolated local fish populations are present.

The influence of fire on persistence of native salmonid populations is highly variable. However, several elements appear to be critical for populations to persist fire and other types of disturbances. First, available evidence suggests fish populations are more likely to occur, and thus persist, in larger, less isolated habitats (Dunham et al. 1997, Rieman and McIntyre 1995, Dunham and Rieman 1999, Dunham et al. 2002). Populations that occupy a greater number of watersheds are more likely to occur in a broader diversity of habitat conditions allowing them to better survive disturbances. Second, populations that have complex life histories provide temporal and spatial hedges against local extinction

following catastrophic disruption. Third, in larger interconnected systems, fish populations appear to be more resilient to the effects of fire. The importance of connectivity was evident in studies of salmonids responses to fires that burned through two tributary streams in the Boise River basin in the early 1990s (Rieman et al. 1997). In one stream, a local population of bull trout (Salvelinus confluentus) was probably extirpated, at least temporarily, following a severe burn and associated channel disturbances. The population was reestablished within a year through spawning returns of migratory individuals that were presumably outside of the system during the fire and related disturbances. Finally, larger populations are more likely to persist than smaller populations from disturbance events.

In watersheds where the threat of large fires is high, local populations of sensitive aquatic species may be at risk because they are isolated or are very small (Kruse et al., 2001; Dunham *et a*l., in press). Fires burning over large areas are likely to influence more habitats simultaneously, compromising the spatial and temporal diversity in habitat conditions and population dynamics believed to be important to the stability and persistence of species and populations. Such effects might be particularly important where populations and habitats are already degraded. Because many of the remnant populations of fishes are already depressed, small or isolated, they lack the resilience, diversity, or demographic support to rebound from disturbance (Dunham et al., 1999; Rieman and Dunham, 2000; Dunham et al., this issue). In some cases, local extinctions have been observed in response to fire, particularly in areas where populations of fishes have been isolated in small headwater streams (Rieman et al. 1997).

The risk from large, uncharacteristic wildfires could lead to long-lasting effects that may further stress isolated and depressed populations. It is believed that prescribe fire and select mechanical treatments can reduce some of these threats. It is also realized that past timber harvest activities have contributed to degradation in aquatic ecosystems, and that emphasis on timber harvest and thinning to restore more natural forests and fire regimes represents a threat of extending these problems. Our coarse assessment of benefits from management treatments is not an endorsement of full-scale treatments, over thousands of acres. At some point management actions would pose too great of a risk to populations. This is why careful analysis at the project scale will be required to determine the best course of action in any subwatershed. However, because many depressed populations lack the numbers to rebound quickly and isolated populations lack the connectivity to re-colonize burned areas, some level of management treatments, combined with other restoration, is appropriate to reduce fire risks in certain circumstance. Brown *et a*l., 2001; Rieman et al., in press have come to similar conclusions stating that active management to reduce the impact of fires and fire suppression actions could be an important short-term conservation strategy. Mealey and Thomas (2002) also have concluded that reducing the threat of uncharacteristic wildfires could be critical to short-term survival of some fish population.

Assumption 2 - The risks of mechanical and prescribed fire treatments are greater than the risk of uncharacteristic wildfire where strong populations are present.

Strong populations are believed to retain many of the population characteristics and occupy watershed with the habitat characteristics to withstand the effects of large, uncharacteristic fires. In particular, strong populations generally have good connectivity that allows them to re-colonize habitat that is altered from large fires. Many of the remaining strong populations within the Ecogroup also occur in

unroaded or lightly managed subwatersheds. It is assumed that threats from treatments in these areas may be too great to the last remaining strongholds, even with following forest-plan management direction. Attempts to minimize the risk of large fires by expanding timber harvest, risks expanding the well-established negative effects on aquatic systems. The perpetuation or expansion of existing road networks and other activities can erode the ability of populations to respond to the effects of fire and large storms and other disturbances that we cannot predict or control (National Research Council 1996). Our assumptions should not be interpreted as an endorsement of no treatments in stronghold subwatersheds. Certain circumstances may warrant limited treatments in specific areas. This is again why careful project level analysis will be required to determine the best coarse of action.

For this analysis the following set of assumptions were made:

1. The risk of uncharacteristic wildfire in short-term is greater than the risk of mechanical and prescribed fire to treat vegetation in some situation where depressed or isolated local fish populations are present. Depressed and isolated populations could be vulnerable to the effects of intense or very large wildfires. Risks of fire are likely most important for aquatic ecosystems that have been seriously degraded, fragmented, and to species that have very specific habitat requirements.
2. The risks of mechanical and prescribed fire treatments are greater than the risk of uncharacteristic wildfire where strong populations are present. Watersheds that support healthy populations may be at greater risk through disruption of watershed processes and degradation of habitats caused by intensive management than through the effects of fire.
3. Short-term threats from treatments will be mitigated to the fullest extent possible.
4. If threats are too great to a fish population, projects will be deferred until conditions that limit fish populations are addressed.
5. Where treatments to reduce fire risk occur, temporary or short-term threats from treatments will be mitigated to meet the intent of SWRA Standards 1 and 4. This mitigation may include completing needed aquatic restoration prior to fire management treatments being implemented.
6. The fewer management tools available to restore natural vegetative conditions, the greater the risk to depressed and isolated local populations from uncharacteristic wildfire.
7. It is recognized that some depressed populations may be at more of a risk from uncharacteristic wildfire than others due to local habitat conditions and populations characteristics. Thus not all depressed population will be treated the same at the project level.

The following discussion explains how levels of risk for Fire Management were applied to each subbasin.

The forest-wide management direction provides a high degree of protection to soil-hydrologic conditions, riparian functions and ecological processes and aquatic habitats from management actions associated with fire suppression and prescribed fire management (BA, Chapter VI, Fisheries, *Effects Analysis, Reduction in Threats - Forestwide and MPCDirection*). However, some threats still remain to listed fish species and their proposed or designated critical habitat. These include threats from disturbance, riparian vegetation, water quality, watershed conditions, channel conditions and flow/hydrology pathways (BA, Chapter VI, Fisheries, *Effects Analysis, Reduction in Threats - Forestwide and MPCDirection*).

It is assumed that potential threats from management activities are greatest in those subwatersheds with a high risk from uncharacteristic wildfire and high emphasis MPCs that require both mechanical and

prescribed fire treatments, moderate in those subwatersheds with limited emphasis MPCs requiring mechanical and fire treatments, and lowest in subwatersheds with limited emphasis MPCs requiring only prescribed fire. However, it is recognized these effects are more complex than these general assumptions portray. Effects will vary as site conditions change and with the intensity of each treatment. For example, helicopter harvest to thin vegetation and reduce fire risk would create relatively little risk to listed fish species and critical habitat compared to harvest involving lots of roads and skid trails.

Based on our assumptions (BA, Chapter VI, Fisheries, *Effects Analysis, Effects Approach and Methodology*), the presence of specific MPCs in any subbasin would determine relative risk to listed fish and critical habitat. Subbasins with a large percentage of 3.2, 4.1c, 4.2, 4.3, 5.1, 5.2, 6.1, and 6.2 MPCs in subwatersheds at high risk from uncharacteristic wildfire are assumed to have more management tools available to treat vegetation and thus more threats. Subbasins with MPCs 2.1 and 2.2 are considered to have a moderate risk because treatments are constrained by other resource objectives. Finally, MPCs 1.1, 1.2, 3.1, 4.1a, and 4.1b are considered to represent the lowest risk because of limited treatments (only prescribed fire) and other resource constraints (e.g., treatments must minimize impacts to ORVs, RNAs, SWRA/TEPC resources, roadless areas, etc.).

Subbasins with the greatest potential for management related threats from prescribed fire and thinning (large number of subwatersheds at high risk from uncharacteristic wildfire and high emphasis to treat risk) in the Ecogroup include the South Fork Boise, North Fork/Middle Fork Boise, Boise-Mores, Middle Fork Payette, Payette, Weiser, Brownlee Reservoir, **Lower Salmon**, and **South Fork Salmon**. Subbasins where there is a low threat from management related actions include **Hells Canyon**, South Fork Payette, **Little Salmon River**, and **Middle Salmon-Chamberlain**. Subbasins where there are no subwatersheds at risk from uncharacteristic wildfires and thus no management related threats include the North Fork Payette, Lower Middle Fork Salmon, **Upper Middle Fork Salmon**, and **Upper Salmon**.

Additional Standards and Guidelines for mechanical treatments are discussed under the Timberland Resources and Vegetation section.

## E. Non-native plants

Threats from noxious weeds treatments would most likely occur in those subbasins with extensive amounts of trails, roads, and other forest facilities (typically MPCs 3.2, 4.2, 4.3, 5.1, 5.2, 6.1, 6.2). This is because the more sources of exposure, the higher the likelihood of infestation and the better access to detect and treat these infestations. Subbasins with the potential for more noxious weed treatments include Boise-Mores, South Fork Boise, South Fork Payette, Middle Fork Payette River, Payette River, North Fork Payette, **Little Salmon**, Brownlee Reservoir, and Weiser River. Subbasins with large amounts of roadless and/or undesignated low road density areas (typically MPCs 1.1, 1.2, 2.1, 2.2, 2.4, 3.1, 4.1a, 4.1b, and 4.1c) are likely only have localized infestation associated with access points. These subbasins include **Hells Canyon**, North Fork/Middle Fork Boise, **Upper Salmon**,

**Upper Middle Fork Salmon**, **Lower Middle Fork Salmon**, **Middle Salmon Chamberlain**, **South Fork Salmon River**, and **Lower Salmon River**.

## F. Minerals Management

The forest-wide management direction provides a high degree of protection to soil-hydrologic conditions, riparian functions and ecological processes and aquatic habitats from management actions associated with mineral activities (BA, Chapter VI, Fisheries, *Effects Analysis, Reduction in Threats - Forestwide and MPC Direction*). However, some threats still remain to listed fish and their proposed or designated critical habitat. These include threats from disturbance, riparian vegetation, water quality, watershed conditions, channel conditions and flow/hydrology pathways (BA, Chapter VI, Fisheries, *Effects Analysis, Reduction in Threats - Forestwide and MPC Direction*). Threats would be most pronounced where the Forest Service has limited authority to regulate mining activities.

Mining impacts vary between subbasins. The following subbasins are expected to have a high potential for continued mining activity and threats described in BA, Chapter VI, Fisheries, *Effects Analysis, Reduction in Threats - Forestwide and MPC Direction* due to mineral deposits. These subbasins include: South Fork and Middle Fork Boise River, Mores Creek, South Fork Payette River, **South Fork Salmon River**, **Lower Middle Fork Salmon**, and **Middle Salmon-Chamberlain**. In these subbasins on-going mining activities will continue to be reviewed and additional mitigation measures implemented through site-specific consultations.

## G. SWRA Restoration

The degree that MPCs emphasized restoration or conservation was central to analyzing the benefits of restoration or threats from the lack of restoration. The number of subwatersheds recommended as high priority by WARS for active and passive restoration, and conservation were compared to the MPC assignments in each subbasin.

Subwatersheds where active restoration was recommended by WARS and a 3.2 MPC were considered to provide the appropriate type of restoration. This is because a 3.2 MPC emphasizes active restoration of degraded aquatic, terrestrial and watershed conditions. Subwatersheds where active restoration recommended by WARS and a 5.2 MPC was assigned, were considered to not provide the appropriate restoration priority or emphasis for aquatic resources. A 5.2 MPC does not prohibit aquatic restoration, but emphasizes commodity production. Restoration opportunities could still occur in these areas, but would be more dependent project mitigation and funding on timber generated funds (K-V). Other MPCs that were considered to not provide the appropriate emphasis for aquatic restoration include: 4.2, 4.3, 5.1, 6.1, and 6.2.

In subwatersheds where the aquatic restoration emphasis was lower, the risk to listed fish species was considered higher because problem culverts, roads, etc., would not be immediately addressed. This

could lead to a higher risk of failure and more impacts to aquatic species, especially in subwatersheds that are already in a poor condition. The implications from the lack of active restoration would vary with the current status of each fish population that occupied that subwatershed. Depressed populations could be placed at greater risk of extinction, while stronghold populations could become depressed.

Subwatersheds designated as an ACS priority were considered a high priority for aquatic restoration or conservation regardless of the MPC designation. It was assumed in subwatersheds with a moderate or low aquatic restoration emphasis MPCs that the ACS designation would result in more aquatic restoration or conservation being completed. However, the ACS designation would not necessarily implement the appropriate type of restoration recommended by WARS. For example, WARS may recommend active restoration, but the MPC may only allow passive restoration or conservation. Restoration in ACS subwatersheds with moderate or low aquatic restoration emphasis MPCs would also have to compete more with other resource priorities. This may make it harder for the completion of all immediate restoration priorities. It is assumed, however, that enough restoration would be completed so current conditions would be either maintained or slowly trend toward recovery.

For this analysis the following set of assumptions were made:

1. Restoration would occur at a level that is consistent with MPC and ACS designations.
2. Restoration would occur first in the ACS priority subwatersheds in each subbasin.
3. At least two to five ACS priority subwatersheds per subbasin would have all needed restoration activities completed over the life of the plan.

In the subbasin analysis, risk from lack of restoration was based on how well emphasis provided by the assigned MPC met the WARS recommended restoration emphasis (active, passive, or conservation). Where there was a high degree of correlation (i.e. >67% good matches, subbasin MPC emphasis matched WARS emphasis), risk associated with lack of needed restoration was low; where moderate correlation (i.e. 34-64% good matches), risk was moderate, etc.

## ATTACHMENT #10
## Consistency with the Final Basin-wide Salmon Recovery Strategy

On December 21, 2000, the federal government released the final version of a comprehensive, long-term strategy to restore threatened and endangered salmon and steelhead throughout the Columbia-Snake River Basin of the Pacific Northwest (Federal Caucus 2000). This strategy outlines specific actions to be taken by the federal government, and proposes additional actions for tribal, state and local governments, which together will prevent extinction of these species and lead to their ultimate recovery. Its biological goals are to halt the decline in salmon populations within five to ten years, and establish increasing trends in abundance within 25 years.

The USFS and the BLM manage over 60 percent of the currently accessible spawning and rearing habitat for anadromous fish in the Columbia River Basin, located in the upper and mid-elevation portions of tributary areas. Federal Land Managers are committed to maintaining existing high quality habitat and as funding becomes available restoring degraded habitat. Federal Lands have the potential to provide a strong foundation for salmon recovery with the Columbia River Basin.

To help protect and recover Columbia-Snake River Basin ESA-listed salmon and steelhead, the USFS and BLM made a series of commitments designed to maintain and restore tributary habitat on Federal lands. Table 1 provides a crosswalk demonstrating how the proposed Revision for the Boise, Payette, and Sawtooth National Forest (Southwest Idaho Ecogroup [SWIE]) Land and Resource Management Plans (LRMPs) addressed or considered each of these commitments.

After thorough review of the proposed action, it has been determined that the proposed action is consistent with the specific commitments and primary objectives of the Basin-wide Salmon Recovery Strategy. The action as proposed contains elements addressing each commitment made under the strategy.

**Table 1. Crosswalk Demonstrating Where and How the SWIE LRMP Revision Addressed USFS and BLM Commitments Made Under the Final Basin-wide Salmon Recovery Strategy.**

| USFS/BLM Commitment | Examples of Where Addressed/Considered in LRMP Revision |
|---|---|
| 1. Retain or recharter the IIT or a similar interagency team to aid in the transition from interim aquatic management strategies and products developed by the IIT to the long-term ICBEMP direction. | Chapter IV of the LRMPs, which addresses plan implementation and monitoring, requires continued participation in the IIT monitoring effort to ensure compliance with broad-scale (e.g. PACFISH) restoration and recovery efforts. |
| 2. Strategically focus USFS and BLM scarce restoration resources using broad-scale aquatic/riparian restoration priorities to first secure federally-owned areas of high aquatic integrity and second, restore out from that core, rebuilding connected habitats that support spawning are rearing. | WARS was designed to recognize the variability of natural systems while: 1) securing existing habitats that support the strongest populations of wide-ranging aquatic species and the highest native diversity and geomorphic and water quality integrities; and, 2) extending favorable conditions into adjacent subwatersheds to create a larger and more contiguous network of suitable and productive habitats; and, 3) restoring soil-hydrologic processes to ensure favorable water quality conditions for aquatic, riparian, and municipal beneficial uses that will contribute to the de-listing of listed fish species and water quality limited waterbodies. |
| 3. Ensure that land managers consider the broad landscape context of site-specific decisions on management activities by requiring a hierarchically-linked approach to analysis at different geographical scales. | Although not including commitments or a schedule for completion of subbasin assessments and watershed analysis, the USFS does intend to participate in subbasin planning efforts (see 4 below) and complete watershed analysis when warranted to drive project decisions. The SWIE Matrix has been designed with direction that calls for use of the Matrix at multiple scales. For example, if conditions are degraded at the subwatershed or watershed scale, another Matrix will be completed at the next greater scale to get a better assessment of the overall effect of the proposed project. Organization of the WARS database will facilitate this analysis at multiple scales, with the ability to evaluate data at the subbasin, watershed, and subwatershed levels. |
| 4. Cooperate with similar basin planning processes sponsored by the NPPC, BPA and other Federal agencies, states and tribes to identify habitat restoration opportunities and priorities. Integrate information from these processes into ICBEMP subbasin review when appropriate. | - *SWRA Obj. 20* - As requested by the lead agency, coordinate data exchange and provide review/input into subbasin planning efforts undertaken by the State Office of Species Conservation, the Northwest Power Planning Council, Tribes, and local watershed advisory groups. |

| USFS/BLM Commitment | Examples of Where Addressed/Considered in LRMP Revision |
|---|---|
| 5. Consult with NOAA Fisheries and FWS on land management plans and actions that may affect listed fish species following the Streamlined Consultation Procedures for Section 7 of the ESA, July 1999. | - *TEPC Obj. 6* - Develop an agreed upon process with NOAA Fisheries and FWS for project-level consultation that addresses multi-scale analyses and tracking environmental baselines.<br>- *TEPC Std. 1* - The Forest shall consult with the NOAA Fisheries and FWS as needed, and appropriate, to comply with consultation requirements under ESA and MSA.<br>- Although the LRMPs provide commitment to consult under an agreed upon process, do not specifically reference Streamlined Consultation Procedures. An assumption stated of the LRMP Revision Opinion is that Streamlining or a similar agreed upon will continue to apply. |
| 6. Collaborate early and frequently with states, tribes, local governments and advisory councils in land management analyses and decisions. | - *SWRA Obj. 10* - Coordinate with municipalities to ensure that management actions are consistent with water quality requirements within municipal watersheds.<br>- *SWRA Obj. 11* - Coordinate with state and local agencies and tribal governments annually to limit or reduce degrading effects from stocking programs on native and desired non-native fish and aquatic species.<br>*TEPC GL. 14* - For watersheds with listed aquatic species, essential fish habitat, or designated critical habitat, transportation system design criteria for fish passage should be coordinated with NMFS or FWS, as appropriate.<br>- *Non-native Plants Obj. 3* - Develop strategic noxious weed management plans for Coordinated Weed Management Areas. Cooperate on a regular basis with federal agencies, tribal governments, the State of Idaho, county weed organizations, state and local highway departments, and private individuals in establishing Coordinated Weed Management Area strategic priorities, and locating/treating noxious weed species.<br>- *Non-native Plants Obj. 4* - Coordinate with the Idaho Department of Transportation and county officials to assist and promote cooperative efforts to reduce introduction and spread of noxious weeds.<br>- *Fire Management Obj. 7* - Coordinate vegetation management activities and partnership opportunities with local land managers and owners for wildland fire suppression and use, and prescribed fire.<br>- *Range Obj. 1* - Coordinate the design, update and/or revision of Allotment Management Plans with adjacent landowners to maximize opportunities and minimize potential conflicts in management.<br>- *Minerals Obj. 4* - Coordinate and cooperate with other federal and state agencies having authority or expertise in mineral-related activities. |

| USFS/BLM Commitment | Examples of Where Addressed/Considered in LRMP Revision |
|---|---|
| 7. Cooperate with other federal agencies (in particular NOAA Fisheries and FWS), states, and tribes in the development of recovery plans and conservation strategies for listed and proposed fish species. Require that land management plans and activities be consistent with approved recovery plans and conservation strategies. | - *TEPC Obj. 9* - As funding allows, implement restoration activities in accordance with the current Watershed and Aquatic Recovery Strategy (WARS) or Forest Service-approved portions of recovery plans to: a). Restore listed fish species distribution, b). Restore desired habitat conditions, c). Conserve genetic diversity, and d). Provide for genetic exchange.<br>- *TEPC Obj. 10* - Over the planning period, initiate habitat restoration for at least two subpopulations of anadromous and two populations of resident fish in each subbasin where these species occur. Use the current WARS, or Forest Service approved portions of recovery plans, to assist in determining watershed priorities for habitat restoration within a subbasin.<br>- *TEPC Std. 3* - Design and implement projects to meet the terms of Forest Service approved portions of recovery plans. If a recovery plan does not yet exist, use the best information available (for example, BAs, BOs, letters of concurrence, Forest Service-approved portions of Conservation Strategies) until a recovery plan is written and approved.<br>- *TEPC GL* 4 - The Forest should cooperate with USFWS and NOAA Fisheries, as appropriate, by providing information, data, and assistance for the development of recovery plans for species listed under the ESA. |
| 8. Collaborate with other federal agencies, states, tribes and local watershed groups in the development of watershed plans for both federal and non-federal lands and cooperate in priority restoration projects by providing technical assistance, dissemination of information and allocation of staff, equipment and funds. | - *SWRA Obj. 20* - As requested by the lead agency, coordinate data exchange and provide review/input into subbasin planning efforts undertaken by the State Office of Species Conservation, the Northwest Power Planning Council, Tribes, and local watershed advisory groups.<br>*See Collaboration examples identified under commitment #6.* |
| 9. Share information, technology and expertise, and pool resources, in order to make and implement better-informed decisions related to ecosystems and adaptive management across jurisdictional boundaries. | - *TEPC Obj.* 1- Continue to map and update locations of species occurrence and habitat for TEPC species during fine- or site/project-scale analyses. Incorporate information into a coordinated GIS database and coordinate with the Idaho Conservation Data Center.<br>- *TEPC Obj. 5* - Coordinate with research efforts for TEPC species to determine basic life history requirements and potential effects from management activities. Coordinate efforts and information with the Idaho Conservation Data Center, universities, Forest Service Research Stations, etc.<br>*See Collaboration examples identified under commitment #6.* |
| 10. Collaborate with other federal agencies, states and tribes to improve integrated application of agency budgets to maximize efficient use of funds towards high priority restoration efforts on both federal and non-federal lands. | - *SWRA Objective 19* - Identify and capitalize on funding opportunities to assist in the restoration of aquatic habitat and watershed conditions important to the recovery of listed fish species and de-listing of 303(d) impaired waterbodies. Examples of potential funding sources include the State Clean Water Act 319 Funds, Federal Columbia River Power System Re-licensing funds, and funds from the NPPC, public and private partnerships. |

| USFS/BLM Commitment | Examples of Where Addressed/Considered in LRMP Revision |
|---|---|
| 11. Collaborate with other federal agencies, states and tribes in monitoring efforts to assess if habitat performance measures and standards are being met. | - *Miscellaneous direction* involving coordination with State Governments, other Federal Agencies, and Tribal Governments can be found in but not limited to: TEPC Obj. 1 & 5; SWRA Obj. 10, 11, & 20; SWRA GL 10; Non-native Plants G 1 & 3, Obj. 2-4, GL 2 & 6; Fire Mngmt. Obj. 7; Range Obj. 1; Minerals Obj. 4; Facilities/Roads Obj. 5; Recreation Obj. 26, Stand. 1; and Tribal Obj. 1 & 4, Std. 3 & 4, GL 3<br>- *Social & Economic Goal 1* - Promote collaboration among federal, state, county and tribal governments in land management planning, implementation, and monitoring efforts to coordinate activities and improve the effectiveness in delivery of government services. |
| 12. Require that land management decisions be made as part of an ongoing process of planning, implementation, monitoring and evaluations. Incorporate new knowledge into management through adaptive management. | The *Continuous Assessment and Planning (CAP)* process was developed to allow the LRMPs to adapt through time. If, for instance, monitoring shows that a certain standard is not working, or that a new guideline is needed, these changes would be made during the planning period with Forest Plan amendments. The intent of future management is to use this continuous process to planning, implementing, monitoring, evaluating, and incorporating new knowledge into forest planning management strategies, for adaptive management purposes. |
| 13. Enhance the existing organizational structure with an interagency basin-wide coordinating group and a number of sub-regional interagency coordinating communities. These coordinating groups and committees will ensure the implementation of ecosystem-based management across Federal agencies' administrative boundaries, resolve implementation issues, be responsible for data management and monitoring, and incorporate new information through adaptive management. | - *Miscellaneous direction* involving coordination with State Governments, other Federal Agencies, Tribal Governments, Universities and advisory groups can be found in but not limited to: TEPC Obj. 1 & 5; SWRA Obj. 10, 11, & 20; SWRA GL 10; Non-native Plants G 1 & 3, Obj. 2-4, GL 2 & 6; Fire Mngmt. Obj. 7; Range Obj. 1; Minerals Obj. 4; Facilities/Roads Obj. 5; Recreation Obj. 26, Stand. 1; and Tribal Obj. 1 & 4, Std. 3 & 4, GL 3<br>- *Social & Economic Goal 1* - Promote collaboration among federal, state, county and tribal governments in land management planning, implementation, and monitoring efforts to coordinate activities and improve the effectiveness in delivery of government services.<br>- The *CAP process*, described above, will be used for adaptive management purposes. |

Key: G - Goal(s)
Obj. - Objective(s)
Std. - Standard(s)
GL - Guideline(s)