

# Chapter 3

## Description of the Alternatives

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### Contents

<b>Key Terms Used in Chapter 3</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>Summary of the Alternatives Considered in Detail</b> .....	<b>5</b>
Alternative S1 .....	5
Alternative S2 .....	7
Alternative S3 .....	11
<b>Selection of the Preferred Alternative</b> .....	<b>12</b>
<b>Management Direction for Alternative S1 (No-action)</b> .....	<b>13</b>
<b>Management Direction for Alternatives S2 and S3</b> .....	<b>38</b>
Key Features That are the Same as the Draft EIS Alternatives 3 through 7 .....	38
Key Features of Alternatives S2 and S3 that Differ from Draft EIS Alternatives 3 through 7 .....	39
Step-down, Adaptive Management, and Monitoring .....	40
Base Level .....	53
Restoration .....	92
Terrestrial T Watersheds .....	124
Aquatic A1 and A2 Subwatersheds .....	132

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## Key Terms Used in Chapter 3

**Fine-scale** — A small landscape, such as a watershed (50,000 to 60,000 acres), a subwatershed (approximately 20,000 acres), or in some cases, groups of watersheds or subwatersheds.

**Goal** — The state or condition that implementation of this Record of Decision (ROD) is intended to achieve. Goals in the ICBEMP EIS and ROD are expressed in broad, general terms, and are timeless in that they are not required to be completed by a certain date. Goals form the principal basis from which objectives are developed, and are consistent with the purpose and need statement.

**High Restoration Priority Subbasins** — Subbasins identified by the ICBEMP as high priority for restoration at the broad scale, where management intent is to concentrate restoration efforts (such as aquatic, water quality, vegetation management, or reestablishing fire) and to make restoration activities more effective and efficient.

**Long Term** — As used in this chapter, more than 10 years.

**Mid-scale** — A subregional area, such as groups of subbasins or a RAC/PAC (Resource Advisory Council/ Provincial Advisory Committee) area.

**Objective** — Indicates short-term (10 years) and/or long-term outcome(s) that is(are) expected or desired. Objectives are more specific than goals, and they focus primarily on conditions or processes we are trying to achieve or prevent rather than on specific actions or restrictions. Whenever possible, time periods expected to attain the outcome are specified.

Actions taken after the ICBEMP ROD is signed must be consistent with the objectives. In the long term (more than 10 years), management actions must move broad-scale resource conditions toward the desired conditions described in the objectives. If actions are moving toward a different condition than is described by the goals or objectives, then the agencies are not in compliance with the ROD. However, ICBEMP objectives are broad scale; therefore, it is neither expected nor appropriate to achieve each objective to the same degree on every acre of Forest Service- or BLM-administered land in the project area. Nor is it intended that each activity authorized will individually meet or forward each objective.

**Short Term** — 10 years or fewer.

**Standard** — Required action, priority, process, or prescription that addresses how to achieve one or more objective(s). Standards can include restrictions on or prohibitions from taking an action in certain areas or situations. Compliance with standards, as with objectives, is mandatory. If standards are not followed, then the agencies are not in compliance. When “shall” is used in a standard, the action is mandatory. When “should” is used in a standard, the action is mandatory unless other actions (including non-action) meet the intent of the standard.

**Guideline** — Suggested action, priority, process, or prescription that would be useful in meeting one or more objective(s). Guidelines are not required but are included in the ICBEMP EIS and ROD to further explain the EIS Team’s intent in how to meet the objectives. “May”, “can”, or “could” are used in guidelines to indicate that they are suggested techniques, which are optional.

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# Introduction

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## Background

This is a brief summary of the background information presented in Chapter 1. On June 6, 1997, two draft environmental impact statements (EISs) for the Interior Columbia Basin Ecosystem Management Project (ICBEMP) were released to the public. An 11-month comment period with extensive outreach followed release of the draft EISs.

Based on public, agency, and science input on the draft EISs, new information from science, and discussions with tribal and interagency partners, a refinement to the design of the overall strategy for the project was initiated. This refined focus was emphasized in a letter from the Secretaries of Agriculture and the Interior (October 8, 1998) to those members of the Congress who represent constituents of the states located in the project area. The new approach would address a limited number of issues which must be resolved at the basin level, while allowing flexibility for other issues to be dealt with at finer scale or local levels. This new approach was to be presented in a supplemental draft EIS. The new approach in management direction, presented here in Chapter 3 of the Supplemental Draft EIS, focuses on four basic components: (1) landscape succession/disturbance, (2) terrestrial species habitat, (3) aquatic habitat, and (4) human needs, products, and services.

The revised strategies also include a more detailed description of how local Forest Service and BLM managers and their staffs can take the broad-scale information and management direction portrayed in this EIS, and “step it down” to mid- and fine scales. The step-down processes allow local managers to consider site-specific conditions when designing activities to meet broad-scale expected outcomes. (In this EIS, mid scale is a subregional area, such as groups of subbasins or a RAC/PAC [Resource Advisory Council/Provincial Advisory Committee] area. Fine scale is a smaller landscape, such as a watershed [50,000 to 60,000 acres], a subwatershed [approximately 20,000 acres], or in some cases, groups of watersheds or subwatersheds). The step-

down processes include Subbasin Review and Ecosystem Analysis at the Watershed Scale (EAWS).

Finally, the revised strategies provide the ability to accommodate a range of funding levels. Therefore, if additional funding should be available to the agencies, the broad-scale priorities, opportunities, and management emphases have already been identified.

## Alternatives Considered but Eliminated Prior to Release of the Draft EISs

During the extensive public involvement process that started with scoping and the publication of the Notice of Intent to prepare the Eastside and Upper Columbia River Basin Draft EISs, several public groups, tribes, and government agencies participated by offering written suggestions for formulation of alternatives or parts of alternatives. Those offering suggestions for the Draft EISs included several American Indian tribes, Eastside Ecosystem Coalition of Counties, Weyerhaeuser Corporation, Boise Cascade Corporation, World Wildlife Fund, and federal regulatory agencies, including the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and the Environmental Protection Agency.

Only one fairly complete alternative was presented for the EIS Team to consider. This came from the Forest Service Employees for Environmental Ethics (FSEEE). The EIS Team determined that, taken in its entirety, the FSEEE alternative did not fully address the purpose of and need for action. Specifically, it did not meet the need to support the economic and/or social needs of people, cultures, and communities, and to support predictable and sustainable levels of goods and services from Forest Service- and BLM-administered lands. Further, the proposed alternative was not based on the *Scientific Assessment*. Although the FSEEE alternative was not described in its entirety as a separate alternative, nor was it analyzed in detail, several of its elements were incorporated into Alternative 7 in the Draft EISs.

## Suggested Combinations of the Draft EIS Alternatives

During the 11-month public comment period for the Draft EISs, many people submitted comments suggesting that the EIS Team combine parts of the seven alternatives to better address issues. These suggestions were reviewed by the EIS Team in light of the purpose and need statement, issues identified through the public scoping process, the narrowed focus and broad scale look at which this Supplemental Draft EIS was written, information available from the Science Team, and the themes of the alternatives already presented in the Draft EISs. To the extent the suggestions helped meet the purpose and need and address identified issues at the broad scale of this Supplemental Draft EIS, they were used in development of the two new “action” alternatives. The following are examples of a few of these suggestions (see Appendix 4 for the summarized public comments and the EIS Team’s response on how those comments were used):

- ♦ Combine Alternatives 4 and 7 to provide better protection for areas designated “low ecological integrity” by calling for active restoration and areas of “existing high integrity” by including them in a system of reserves.
- ♦ Combine Alternatives 4 and 6 to restore damaged areas and take a slower management approach, emphasizing conservation, research, and extensive monitoring.
- ♦ Combine Alternatives 6 and 7 to use the active management activities along with a system of reserves.
- ♦ Combine Alternatives 2 and 5 to provide for improved forest and rangeland health, restoration of riparian health, and more timber harvesting and fewer roadless areas.
- ♦ Combine Alternatives 3, 4, and 5, to provide substantial levels of forest restoration and resource protection.

Many commented that they favored the Draft EIS preferred alternative (Alternative 4) with additional elements found in Alternatives 5, 6, and 7. They felt this combination was an active restoration approach to management. Some suggested that Alternative 4 should focus on aggressive ecosystem restoration and support of the local communities. Others endorsed the ideas submitted by the Natural Resource Defense Council for protection of the environment through halting commercial harvesting in old-growth forests and roadless areas. Ideas proposed by the Columbia River Bioregional Campaign promoted the active-yet-cautious approach to closely monitor restoration and

emphasize non-motorized recreation. Some comments suggested the EIS Team consider the Oregon State Plan, which calls for protection of remaining old-growth stands and protection of riparian and roadless areas. Others suggested an alternative that would allocate specific areas for emphasis of management priorities, such as locations where commodity extraction or grazing would be emphasized.

The Supplemental Draft EIS describes and analyzes three additional alternatives (Alternatives S1, S2, S3) in response to these many suggestions. While the FSEEE alternative and other proposals were not brought forward wholly and in detail, many of the concepts offered by various organizations and other governmental agencies have been incorporated into Alternatives S2 and S3. (Alternative S1, no-action, would continue with present management; it is based on Alternative 2 of the Draft EISs, recognizing that the interim management for protection of eastside forests, and anadromous and other native fish habitat has become part of Forest Service and BLM land use plans across the project and accurately represents the “no change” alternative.)

For example, Alternatives S2 and S3 identify and map specific important habitats with intact succession/disturbance patterns that are strongholds for aquatic species (A1 and A2 subwatersheds) or important as source habitats for families of terrestrial species (T watersheds). These two alternatives also identify areas with broad-scale priority for restoration. Both Alternatives S2 and S3 provide broad-scale restoration direction that links ecological needs and opportunities to social and economic (including tribal) needs and opportunities. These features are compatible and consistent with many of Governor Kitzhaber’s 11 points, the FSEEE alternative, the Deschutes Provincial Advisory Committee proposal, tribal government proposals, the Eastside Ecosystem Coalition of Counties, and many other suggestions. This is because Alternatives S2 and S3 strive to improve ecosystem health through the maintenance and restoration of riparian, forest, and rangeland vegetation structure and composition; and through protection of old forests and important fish and wildlife habitats, while at the same time providing for social and economic needs of people, cultures, and communities.

Monitoring and adaptive management, which many commentors stressed are necessary, are key features of both Alternatives S2 and S3. Implementation of the ICBEMP decision will use an adaptive management approach—a continual process to modify plans and activities over time, as necessary. An implementation and adaptive management framework is provided in Appendix 10.

## How the Chapter is Organized

The introduction to this chapter describes alternatives that were considered but eliminated and Draft EIS alternative combinations suggested by the public. A Summary of Alternatives Considered in Detail is presented next, to help the reader understand the general concepts of the three alternatives that were considered in detail in the Supplemental Draft EIS. The selection of the preferred alternative is discussed following the summary. The details of the management direction for Alternatives S1, S2, and S3 are then presented in the remainder of the chapter.

Alternative S1 (the No-Action Alternative) is presented first. It has been structured to be as parallel as possible to the description of Alternatives S2 and S3 (organized by the four major components).

The key similarities and the key differences between Alternatives S2 (the preferred alternative) and S3 are highlighted, followed by the description of management direction and management intent for both alternatives. The action alternatives begin with the step-down process, adaptive management, and monitoring; then the four main ecosystem components (landscape dynamics, terrestrial habitat, aquatic/riparian/hydrologic habitat and processes, and social-economic-tribal considerations) are described under base level direction and restoration direction. Management direction and intent for certain special aquatic (A1 and A2 subwatersheds) and terrestrial (T watersheds) delineations complete the chapter.

## Summary of Alternatives Considered in Detail

### Introduction

Seven alternatives were developed and analyzed in the Eastside and UCRB Draft EISs (May 1997). Those alternatives have not been pulled forward to this Supplemental Draft EIS, but any or all of them are still available for the ICBEMP Executive Steering Committee to select. If any of the original alternatives from

the Draft EISs are brought forward, then a clear, sharp comparison between the Draft EIS alternatives and Supplemental Draft EIS alternatives will be made and disclosed to the public.

The seven alternatives presented in the Draft EISs, plus public comment received on those alternatives, plus new science information developed since the Draft EISs were published were used to develop three additional alternatives for detailed consideration in this ICBEMP Supplemental Draft EIS: Alternatives S1 (no-action), S2, and S3. Overall goals of a management strategy for Forest Service- and BLM-administered lands in the project area guide the alternatives. A theme and management direction are presented for each alternative. The management direction for Alternatives S2 and S3 includes a description and management intent, objectives, standards, and guidelines. See Key Terms box for definitions.

A description and management intent section is provided for many of the strategies or resources. It is intended to clarify the context for objectives and standards and to be followed as a component of the direction. In some cases an objective, standard, or guideline may be accompanied by a rationale, which includes background, examples, or further explanation of what was intended by the direction.

The action alternatives considered in detail, Alternatives S2 and S3, reflect the refined focus and approach as described above. They also respond to the Purpose and Need statement in Chapter 1, which is the same as it was in the draft EISs. The presentation of direction for both the no-action and action alternatives begins with direction related to “step-down” (implementation and analysis considerations), adaptive management, and monitoring. Remaining direction is organized to focus on the four basic components:

- ♦ Landscape dynamics,
- ♦ Terrestrial source habitats and species,
- ♦ Aquatic/riparian/hydrologic habitat and processes, and
- ♦ Social-economic-tribal considerations.

### Alternative S1

#### Theme

Alternative S1 (no action) continues management specified under each existing Forest Service and BLM land use plan, as amended or modified by interim

direction—known as Eastside Screens (national forests in eastern Oregon and Washington only), PACFISH, and INFISH—as the long-term strategy for lands managed by the Forest Service or BLM. The final standards for rangeland health and guidelines for livestock grazing management (Healthy Rangelands) currently being implemented on BLM-administered lands in Idaho, Montana, Oregon, and Washington are continued on the same lands. The reasonable and prudent measures, terms and conditions, and/or conservation recommendations from the Biological Opinions on the Forest Service Land and Resource Management Plans as amended by PACFISH and INFISH are maintained and followed where applicable.

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*Forest Service- and BLM-administered lands would continue to be managed by direction in each individual existing land use plan (currently 64 plans), recovery plan, and other current direction.*

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Forest Service- and BLM-administered lands would continue to be managed by direction in each individual existing land use plan (currently 64 plans), recovery plan, and other current direction. These land use plans cover diverse ecosystems and have distinct, and sometimes widely varying, land management objectives and emphases. Many of the plans were based on the assumption that ecological conditions were healthy, or that disturbances (such as fire, insects, and disease) would not substantially affect planned actions, desired outcomes, or outputs. In general, the intent is to provide sustainable levels of resources (such as timber and wood products, livestock forage, big game and game birds, and minerals) in an environmentally prudent manner from some areas. Other areas are managed as wilderness or wilderness study areas, scenic areas, research natural areas, unroaded lands, and conservation areas to provide other uses and values such as aesthetics, recreation opportunities, viewable wildlife, and clean air and water.

### **Design and Architecture of Alternative S1**

Alternative S1, the no-action alternative, represents all the various land use plans in the project area. These plans were developed at different times by two agencies in several regions using different definitions and policies. The plans vary tremendously, each plan was written at a much smaller scale than the ICBEMP, and each were developed using different goals than the

ICBEMP. An attempt was made to make Alternative S1 parallel to the other alternatives; however, it is described and presented somewhat differently than Alternatives S2 and S3. For example, Alternative S1 is organized by the four major components, just as Alternatives S2 and S3 are (landscape succession/disturbance; terrestrial species habitat; aquatic habitat; and human needs, products, and services). However, it does not have a comprehensive restoration strategy, and there are no aquatic (A1 and A2 subwatersheds) or terrestrial (T watersheds) habitats delineated. Therefore, since it was neither appropriate nor possible to include all direction from individual plans, relevant items were consolidated and paraphrased.

## **Management Direction**

### **Forestland Vegetation Management**

The general intent of forestland vegetation management is to rely on even-aged management practices, favor early seral species with reduced stand densities, improve growth and yields, restore and maintain soil productivity, use genetically improved trees to prompt reforestation, and reduce fuel loads. In the past, lands suitable for timber production were managed at the stand level; however, policy changes, interim strategies, and Biological Opinions have affected forestland management so management activities are planned at watershed scales more than at the stand level, uneven-aged practices are emphasized more, and timber harvest is reduced within riparian areas and priority watersheds.

### **Rangeland Vegetation Management**

The intent of vegetation management on rangelands is focused on providing forage for livestock and wildlife, while protecting soil productivity and coordinating with other resource uses. Control and prevention of noxious weeds and management of non-native plants is gaining importance as a management intent. Healthy Rangelands direction for BLM-administered lands, interim strategies, and Biological Opinions have increased the focus on vegetation and soil conditions and protection of aquatic and riparian values.

### **Wildlife Habitat Management**

The intent of wildlife habitat management is to develop effective wildlife habitat (primarily big game and other game animal habitat) by managing vegetation conditions and distribution of roads. Certain key habitats and habitat components, such as late/old growth forests and snags and downed wood, are

generally planned to exist at relatively low levels—often the minimum required to maintain species viability, although the importance of these habitat components has been enhanced in eastern Oregon and eastern Washington forests because of the Eastside Screens.

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***The intent of managing aquatic/riparian resources has been modified by requirements in PACFISH, INFISH, and the Biological Opinions***

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### **Aquatic/Riparian Management**

Each land use plan generally has direction for aquatic and riparian management. The intent of managing aquatic/riparian resources has been modified by requirements in PACFISH, INFISH, and the Biological Opinions, which provide a consistent approach to aquatic habitat management for most of the project area. The requirements include:

- ◆ Establishing Riparian Habitat Conservation Areas and Riparian Management Objectives;
- ◆ Incorporating standards and guidelines for resource management applied to riparian conservation areas and upland areas affecting riparian areas;
- ◆ Designating priority watersheds and specific subbasins for protection/restoration activities;
- ◆ Using subbasin analyses and Ecosystem Analysis at the Watershed Scale;
- ◆ Focusing watershed restoration on degraded habitats to improve long-term conditions; and
- ◆ Applying terms, conditions, and conservation recommendations to watersheds with listed aquatic species habitats, priority watersheds, or specific subbasins.

### **Restoration**

Restoration of vegetation and succession/disturbance regimes usually are not a priority in existing land use plans. In general, restoration activities such as thinning, prescribed fire, decreased road densities, and watershed restoration occur at relatively low levels. Restoration priorities are set locally, not regionally. The interim strategies and Biological Opinions have increased the focus on restoration of aquatic and riparian resources, and of forest vegetation in eastern Oregon and eastern Washington forests. They have also increased the emphasis on prioritizing restoration beyond the bounds of individual administrative units.

## **Alternative S2**

### **Theme**

Alternative S2 focuses on restoring and maintaining ecosystems across the project area and providing for the social and economic needs of people, while reducing short- and long-term risks to natural resources from human and natural disturbances. An emphasis on conducting analyses, such as Subbasin Review and Ecosystem Analysis at the Watershed Scale (EAWS), prior to conducting management activities is intended to minimize short-term risk from management activities in areas where short-term risks are of most concern, and to ensure actions occur in the most appropriate locations in the most appropriate sequence. In this way, Alternative S2 systematically minimizes short-term risks from management activities or disturbance events. Economic participation of the local workforce in management activities is promoted by ensuring restoration activities are prioritized to occur in areas that are economically specialized in industries tied to goods and services from Forest Service- and BLM-administered lands.

Restoration activities are planned and conducted across the project area to effectively and efficiently address the long-term risks associated with disturbance events. Restoration in certain areas is prioritized based on: areas that have high risk to terrestrial and aquatic habitats of unnaturally severe disturbance and high or moderate opportunity to address those risks (for example through the ability to connect and expand scarce aquatic and terrestrial habitats). In addition, some of these areas are near isolated and economically specialized communities, and therefore have opportunity to provide economic value to human communities.

In addition to promoting the broad-scale restoration and maintenance of ecosystems, conservative direction is also provided to further promote the protection of specific subwatersheds containing important fish populations and specific watersheds containing important terrestrial source habitats. These are the habitats that have declined the most (in geographic extent) from historical to current periods, and therefore, they are in short supply. Management is designed to conserve these habitats by avoiding short-term risks to them, while expanding them elsewhere through restoration actions.

## Design/Architecture of Alternative S2

Management direction in Alternative S2 is hierarchical in that some types of direction take precedence over others. ICBEMP direction may be basin-wide (applies to all Forest Service- and BLM-administered lands in the project area), geographic (applies to certain mapped or described areas), or conditional (applies wherever particular conditions are found).

The design or architecture of Alternative S2 includes four main elements:

1. **Integrated Management Direction** includes base level, restoration, and geographically specific direction, which addresses landscape dynamics, terrestrial source habitats, aquatic species and riparian and hydrologic processes; and social-economics and tribal governments;
2. A **Step-Down** process to bring broad-scale management direction and scientific findings to national forests and BLM districts;
3. **Adaptive Management**, which allows modification of management direction to incorporate new knowledge and understandings; and
4. **Monitoring and Evaluation** to ensure management activities are achieving desired results.

## Integrated Management Direction

The management direction in Alternative S2 is designed to address four major broad-scale ecosystem components: landscape dynamics; terrestrial source habitats; aquatic species and riparian and hydrologic processes; and social-economics and tribal governments. The direction is organized to integrate the interconnections among these components. The intent of the management direction—which includes objectives, standards, and guidelines—is summarized below. The management intent and management direction for Alternative S2 are presented in full later in this chapter.

### Landscape Dynamics

The landscape dynamics component of the integrated ecosystem management strategy was developed to maintain ecosystems that are in good condition, and to restore ecosystems that are degraded on Forest Service- and BLM-administered lands. The intent of management direction for **landscape dynamics** is to maintain or, if necessary, restore the health, productivity, and diversity of native fish, wildlife, and plants; maintain or improve water quality; sustain stream flows; and maintain and/or enhance the

resiliency of forests and rangelands to fires, disease, and other disturbances. This direction provides the foundation for managing long-term risk to fish, wildlife, and plant species and habitats, and social-economic needs (including tribal rights and interests). It provides the thread that connects and integrates the individual components. Management direction for landscape dynamics can be found in the base level, restoration, and terrestrial T watershed sections; however, direction for aquatic A1 and A2 subwatersheds also contributes to the maintenance and restoration of landscape dynamics.

One intent of managing native plant communities is to slow the rapid spread of **noxious weeds** using an integrated weed management strategy. Another intent is to protect and enhance vegetation types that are in short supply and are important to wildlife, such as **old forests**.

Management direction for fire and roads is included as part of landscape dynamics. The intent of direction for **fire management** is to improve vegetation conditions and reduce the threat of severe wildfire through the use of prescribed fire. Coordinating fire management with adjacent landowners is intended to increase the resiliency of forests and rangelands to severe wildfires while also reducing the negative air quality impacts that are associated with severe wildfires.

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***Roads that are needed for land management, public access, and tribal rights are intended to be safe, promote efficient travel, and be improved as needed.***

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The overarching intent for **roads management** within the ICBEMP is to progress toward a smaller transportation system that provides public access, reduces road-related adverse effects, and can be maintained in the long term with minimal environmental impact. Roads that are no longer needed will be closed or obliterated and ecological values restored. Roads that are needed for land management, public access, and tribal rights are intended to be safe, promote efficient travel, and be improved as needed. New road construction will be reduced from past levels. The focus of road restoration is intended to occur where reduction of adverse effects and benefits to resources can be maximized—for example, along valley bottoms and main river corridors where species are negatively affected by human disturbance and habitat degradation associated with roads.

## Terrestrial Source Habitat

The terrestrial component of the integrated ecosystem management strategy was developed to consider and provide habitat for productive and diverse populations and communities of plant and animal species; provide habitat capable of supporting harvestable resources; and provide for terrestrial habitats on Forest Service- and BLM-administered lands. The focus of the **terrestrial source habitat** direction is to change declining trends in terrestrial habitats by maintaining important vegetation characteristics (such as plant species composition, forest and rangeland vegetation structure, snags, and coarse woody debris) which various terrestrial species need to survive and reproduce. Management direction for terrestrial source habitat can be found in the base level, restoration, and terrestrial T watersheds sections.

**Terrestrial T watersheds** were identified because they contain source habitat for one or more of five “Families” of terrestrial species. Terrestrial species in these Families in general represent those for which source habitats have declined the most from historical to current periods in the project area. In addition, the pattern of source habitats within these watersheds is most similar to that historically found. T watersheds are an important, but not the only, component of the terrestrial habitat strategy. In the short term, the intent of managing source habitats, especially in T watersheds, is to conserve habitats with old-forest characteristics and those that have shown the greatest decline in geographic extent from what they were historically and therefore are in short supply. In the long term, the overall intent is to increase the geographic extent and connectivity of these same habitats, and to have a sustainable mix and pattern of habitats, which should contribute to the long-term persistence of terrestrial species.

## Aquatic Species and Riparian and Hydrologic Processes

The aquatic/riparian/hydrologic component of the integrated ecosystem management strategy was developed to maintain and restore the health of watersheds and aquatic ecosystems on Forest Service- and BLM-administered lands. It focuses on maintaining and restoring watershed conditions, water quality, and aquatic and riparian habitat by replacing interim strategies (PACFISH and INFISH), and addressing long-term aquatic species viability, short- and long-term risks to these resources from management activities, and long-term risks from uncharacteristically severe natural disturbances. Geographically

specific areas, such as riparian conservation areas (RCAs), aquatic A1 subwatersheds, and aquatic A2 subwatersheds, are important components of the aquatic strategy. Management direction for aquatic/riparian/hydrologic resources can be found in the base level, restoration, aquatic A2 subwatersheds, and aquatic A1 subwatersheds sections. In addition, management direction for landscape dynamics and terrestrial source habitats is intended to enhance aquatic/riparian/hydrologic resources.

**RCAs, A1 subwatersheds, and A2 subwatersheds** were identified because of their importance to fish, riparian-dependent species, water quality, and other aquatic, riparian, or hydrologic resources. The management intent in these areas is to protect these resources in the short term and improve them in the long term. Protection and enhancement of these areas is intended to contribute to a network of connected aquatic/riparian habitats and enhance the long-term persistence of aquatic and riparian-dependent species.

## Socio-Economic and Tribal Considerations

The socio-economic-tribal component of the integrated ecosystem management strategy was developed to support the economic and social needs of people, cultures, and communities of the interior Columbia Basin, and to provide for sustainable levels of products and services from lands administered by the Forest Service and BLM within the capabilities of the ecosystem. It focuses on producing **products and services** from public lands to encourage and support people’s use of public land resources within the capacity of ecosystems to provide sustainable levels of products and services, consistent with other ecological and restoration goals. Another intent is to support economic activity for local and tribal communities, particularly those that are isolated and economically specialized, which will help maintain their viability as they move toward achieving their long-range goals of economic development and broader economic diversification. Management direction that specifically addresses this component can be found in base level and restoration sections.

The socio-economic and tribal government direction promotes agency support for, and collaboration with, local communities and tribal governments when developing methods to support their **social and economic needs**. Another intent is to integrate the needs of local and tribal communities more thoroughly into agency decision-making and management activities.

The **socio-economic-tribal restoration** direction highlights areas where restoration activities have a direct influence on human community economic, social, and cultural needs. This direction is linked to restoration direction provided in the landscape dynamics, terrestrial, and aquatic/riparian/hydrologic sections; it relates to considerations for designing and implementing restoration activities that are intended to promote workforce participation, serve demands for commodity products at various levels, encourage intergovernmental collaboration, and consider tribal needs and interests.

The intent of management direction for **federal trust responsibility and tribal rights and interests** is to address as fully as possible tribal concerns and interests and to reflect consideration of federal legal responsibilities both to tribes and American Indian people as expressed through treaty language, federal laws, executive orders, and federal court judgements.

### Step-down

Step-down is the process of applying broad-scale science ICBEMP findings and management direction to site-specific activities on national forests and BLM districts.

Four levels of analysis make up this step-down process:

- ♦ Subregional analysis (BLM resource management plans or Forest Service land and resource management plans);
- ♦ Mid-scale analysis (Subbasin Review);
- ♦ Fine-scale analysis (Ecosystem Analysis at the Watershed Scale);
- ♦ Site-specific NEPA analysis (environmental analysis or environmental impact statement).

The Supplemental Draft EIS proposes direction for mid-scale analysis (Subbasin Review) and fine-scale analysis (Ecosystem Analysis at the Watershed Scale). Forest Service and BLM direction already exist for the development of resource management plans and site-specific NEPA analysis.

The intent of conducting these analyses in this step-down manner is to reduce overall short-term and long-term risks to resources from human and natural disturbances, while maximizing conservation and restoration opportunities. For example, broad-scale or regional resource risks are addressed through the Supplemental Draft EIS, subregional resource risks are addressed through land use plans, mid-scale or

landscape resource risks through Subbasin Review and/or EAWS, and site-specific resource risks through site-specific NEPA analysis.

In *Alternative S2*, there is greater emphasis on conducting analyses (Subbasin Review and EAWS) prior to conducting management activities in certain areas, which is intended to minimize the short-term risks posed by the activities and to assist in determining the most appropriate location and sequence of activities.

### Adaptive Management

The intent of adaptive management is to incorporate and build on current knowledge, observation, experimentation, and experience to adjust management methods and policies, and to accelerate learning. The intent is for management direction to be modified if a site-specific situation is different than what was assumed during ICBEMP planning; if a flood, fire, or other event changes the characteristics of the environment; if new information gathered through monitoring indicates objectives are not being met; or if new science information indicates a need for change. Accelerated learning is intended to occur from formal research designed to test hypotheses of scientifically uncertain and/or controversial management issues, or to use field trials to test the usefulness of new strategies to achieve objectives.

### Monitoring and Evaluation

Monitoring and evaluation are an integral part of adaptive management and are key to achieving the short- and long-term goals and objectives of the ICBEMP. Success in meeting ICBEMP goals and objectives requires that the effects of this outcome-based direction be monitored and evaluated in a timely manner to determine if modifications are needed.

The monitoring and evaluation process is intended to:

- ♦ Focus on ICBEMP goals and objectives to guide key elements to monitor;
- ♦ Be developed collaboratively using an intergovernmental, interdisciplinary team;
- ♦ Address linkages and relationships among scales in the project area;
- ♦ Be based on scientific understandings of interactions among ecosystem components and human activities; and
- ♦ Be technically feasible, affordable, and operationally attainable.

## Alternative S3

### Theme

Alternative S3 focuses on restoring and maintaining ecosystems across the project area and providing for the social and economic needs of people, while reducing short- and long-term risks to natural resources from human and natural disturbances. Because managers must take some short-term risks to address long-term risks of disturbance events, some short-term risk is acceptable within the requirements of the Endangered Species Act, Clean Water Act, and Clean Air Act. Minor emphasis is put on conducting Subbasin Review and Ecosystem Analysis at the Watershed Scale (EAWS) prior to conducting management activities. Management activities are linked to areas where they can benefit isolated communities that are economically specialized in industries tied to goods and services from Forest Service- and BLM-administered lands.

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***Restoration activities are planned and conducted across the project area to address the long-term risks associated with unnaturally severe disturbance events.***

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Restoration activities are planned and conducted across the project area to address the long-term risks associated with unnaturally severe disturbance events. Restoration is prioritized in certain areas based on: disturbance/succession regimes and other measures of landscape dynamics; ability to connect and expand scarce aquatic and terrestrial habitats; hydrologic processes; and economic value to human communities.

In addition to promoting the broad-scale restoration and maintenance of ecosystems, conservative direction is also provided to further promote the protection of specific subwatersheds containing important fish populations and specific watersheds containing important terrestrial source habitats. These are the habitats that have declined the most (in geographic extent) since that historically found, and therefore, they are in short supply. Management is designed to conserve these habitats by avoiding short-term risks to them, while expanding them elsewhere through restoration actions.

## Design/Architecture of Alternative S3

The design/architecture of Alternative S3 is the same as for Alternative S2.

### Integrated Management Direction

#### Landscape Dynamics

The intent of management direction for the landscape dynamics component is the same as that under Alternative S2 with the following exceptions:

*In Alternative S3*, there is a greater emphasis on conducting more immediate actions to address long-term risks to resources from unnaturally severe disturbance.

#### Terrestrial Source Habitats

The intent of management direction for the Terrestrial Source Habitats is the same as that under Alternative S2.

#### Aquatic Species and Riparian and Hydrologic Processes

The intent of aquatic/riparian/hydrologic direction is the same as that under Alternative S2 with the following exceptions:

*In Alternative S3*, there are fewer acres that are delineated as aquatic A1 and A2 subwatersheds and riparian conservation areas (RCAs).

#### Socio-economic–Tribal Considerations

The intent of the socio-economic-tribal management direction is the same as under Alternative S2 with the following exceptions:

*Alternative S3* promotes the economic participation of the local workforce in management activities by prioritizing activities near communities that are less economically diverse and more economically specialized in outputs of goods and services from Forest Service and BLM-administered lands, and near tribal communities.

### Step-down

The intent of step-down under Alternative S3 is the same as that under Alternative S2, with the following exceptions:

In *Alternative S3*, there is less of an emphasis to complete EAWS prior to conducting management activities. Instead, the intent is to prioritize and schedule EAWS and any other necessary analysis during Subbasin Review.

### Adaptive Management

The intent of adaptive management under Alternative S3 is the same as that under Alternative S2.

### Monitoring and Evaluation

The intent of monitoring and evaluation under Alternative S3 is the same as that under Alternative S2.

## Selection of the Preferred Alternative

The preferred alternative identified by the Regional Executive Steering Committee as “preferred” among all those considered (this includes the seven alternatives presented in the Eastside and Upper Columbia River Basin Draft EISs and the three alternatives presented in the ICBEMP Supplemental Draft EIS) is Alternative S2. The preferred alternative identified in this Supplemental Draft EIS replaces the preferred alternative identified in the Draft EISs (Alternative 4). The change in the preferred alternative was influenced by the 83,000 comments received on these Draft EISs, new scientific information, and feedback from the land management agencies, intergovernmental and interagency partners, and the Congress. The focus for the preferred alternative was refined as described in a letter from the Secretaries of Agriculture and the Interior to the northwestern congressional delegation (October 1998).

Alternative S2 was identified as the preferred alternative because, out of the 10 alternatives that were considered in the Draft and Supplemental Draft EISs, the ICBEMP regional executives feel it responds best to the purpose and need statements (in Chapter 1) and the five goals (later in this chapter) under the refined focus of the project. They agreed that it would provide the strongest and best strategy for: restoring

the health of the forests, rangelands, and aquatic-riparian ecosystems in the project area; recovering plant and animal (including fish) species; avoiding future species listings; and providing a predictable level of goods and services from the lands administered by the BLM and the Forest Service.

The regional executives considered several factors in coming to this conclusion. These include:

- ♦ meets the purpose and need statement for the project,
- ♦ consistency with Endangered Species Act requirements and recovery plans,
- ♦ includes a strategy that is intended to preclude further listings of species,
- ♦ addresses agencies’ tribal treaty and trust responsibilities,
- ♦ implementable at reasonably foreseeable funding levels,
- ♦ consistent with and founded on science,
- ♦ provides for implementation accountability,
- ♦ provides for implementation clarity such that management actions will result in the predicted and desired outcomes,
- ♦ degree of likelihood of broad public support for implementation, and
- ♦ meets the intent of applicable federal and state laws.

The regional executives also reviewed the SAG and EIS team analysis of the effects of the alternatives, which are disclosed in Chapter 4.

In coming to consensus on Alternative S2 as the preferred alternative, the regional executives modified early working drafts of management direction to more explicitly explain that the identified opportunities/priorities for restoration activities would be further prioritized at finer scales to ensure the first restoration activities would be linked to areas with potential to benefit local communities. This change is reflected in the direction for Alternative S2. With this clarification, the regional executives concurred that they would present Alternative S2 as their preferred alternative in the Supplemental Draft EIS.

In the Final EIS and Record of Decision (ROD), the decision makers may modify the preferred alternative, incorporate elements of the various alternatives analyzed in the Draft EIS and Supplemental Draft EISs, or even select a different alternative as the preferred alternative. Before issuing the Final EIS and ROD, the Regional Executives will consider additional

analysis of, and changes to, the preferred alternative. The option of incorporating elements of the no-action alternative (Alternative S1) is particularly relevant to the transition from current direction of PACFISH, INFISH, and the Biological Opinions to a long-term management strategy. The effectiveness of Alternative S2 depends on an implementation strategy that uses the existing Federal Land Policy and Management Act and National Forest Management Act planning process and National Environmental Policy Act decision-making process to translate objectives and standards on an ecosystem scale into watershed- and site-specific criteria that local managers can apply when designing particular projects and activities. This implementation strategy is supported by step-down processes, such as Subbasin Review and Ecosystem Analysis at the Watershed Scale.

This transition phase begins when the ROD is signed. This period will vary for different elements of direc-

tion and different subbasins and watersheds. While some elements of Alternative S1 are already contained in Alternative S2, particularly as interim and default standards, the decision makers may consider retaining additional elements of Alternative S1 for the transition phase. Prior to issuance of the ROD, additional work will be done on this transition strategy to determine whether and how elements of Alternative S1 should be carried forward in the transition phase for the preferred alternative.

The final transition strategy is not expected to result in effects that fall outside the range of effects described for the alternatives in this Supplemental Draft EIS. Indeed, the Regional Executives have agreed that the purpose of this additional work is to clarify and focus the preferred alternative to ensure that the effects of the transition strategy, upon implementation, are consistent with the effects described herein. Comment on this topic is encouraged.

# Alternative S1 (No-Action)

## Introduction

Analysis of a no-action alternative is a requirement of the National Environmental Policy Act (NEPA) and BLM and Forest Service planning procedures. Information for the no-action alternative was derived from individual land use plans currently being implemented by the BLM or the Forest Service in the project area, including interim direction (PACFISH, INFISH, Eastside Screens) that has been in place for at least four years. The interim direction was developed to retain options for management of affected federal lands while the long-term strategy addressed through the ICBEMP environmental impact statement was being developed. The no-action alternative was presented in the Draft EISs as Alternative 2. It was

revised and is presented in this Supplemental Draft EIS as Alternative S1.

Interim strategies (INFISH, PACFISH, and Eastside Screens) are presented in detail in the no-action alternative because one of the primary purposes for the ICBEMP project is to provide long-term management direction to replace these interim strategies.

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***The no-action alternative was presented in the Draft EISs as Alternative 2. It was revised and is presented in this Supplemental Draft EIS as Alternative S1.***

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### Major Changes from the Draft EISs

The no-action alternative was revised from the Draft EISs to incorporate terms and conditions, reasonable and prudent measures, and conservation recommendations from the U.S. Fish and Wildlife Service and National Marine Fisheries Service Biological Opinions on the Land and Resource Management Plans as amended by PACFISH and INFISH (NMFS 1995, NMFS 1998, USFWS 1998). It also incorporates by reference the final standards for rangeland health and guidelines for livestock grazing management (known as the Healthy Rangelands Initiative) on BLM-administered lands in Montana, Idaho, Oregon, and Washington signed in 1997 (USDI BLM 1997a, b, c). Objectives and standards have been reorganized to facilitate comparison to action alternatives S2 and S3.

Other components of the direction associated with the no-action alternative (such as Healthy Rangelands, or specific recovery plans) are not expected to be changed directly by ICBEMP decisions and are not presented in as much detail.

To provide a point of comparison for the ICBEMP action alternative(s), relevant items from the individual plans were consolidated and paraphrased into a theme and management direction; therefore the exact language used in Alternative S1 may not appear in individual plans. The resulting Alternative S1 is reasonably representative of those parts of existing plans that correspond to broad-scale direction being proposed in the ICBEMP EIS.

The implementation budget presumed for the aggregation of existing plans represented by Alternative S1 is the current funding level, not the aggregation of their proposed budgets.

If Alternative S1 were selected for implementation, then existing land use plans would continue as currently written and PACFISH, INFISH, and the Eastside Screens would remain direction in those areas where they are currently interim.

## Alternative S1 Description and Management Intent

In the no-action alternative, Forest Service- and BLM-administered lands throughout the project area would continue to be managed by direction in existing land use plans, recovery plans, and other current direction related to threatened or endangered species. There are currently 64 land use plans, from 6 to 21 years old. These cover diverse ecosystems; each plan has distinct, and sometimes widely varying, land management objectives and emphases. Many of the plans were based on the assumption that ecological conditions were healthy, or that disturbances (such as fire, insects, and disease) would not substantially affect planned actions, desired outcomes, or outputs. Recognizing the diverse expectations within the existing plans, the following description and management intent is intended to display general expectations so that comparisons can be made with the other alternatives.

Specific *interim direction* that affects existing management direction is described in the following decision notices and biological opinions:

- ♦ Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (*PACFISH*), February 24, 1995, as amended by the Forest Service September 11, 1996 and by the BLM January 31, 1997.
- ♦ Inland Native Fish Strategy (*INFISH*), July 28, 1995.
- ♦ Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales (*Eastside Screens*), May 20, 1994; amended June 5, 1995; riparian standards were replaced July 31, 1995. Applies to all or parts of the following National Forests located in eastern Oregon and Washington: Colville, Deschutes, Fremont, Malheur, Ochoco, Okanogan, Umatilla, Wallowa-Whitman and Winema national forests. *PACFISH* and *INFISH* are used as the riparian screen requirement.
- ♦ *Biological Opinion*: Land and Resource Management Plans for the: Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests. National Marine Fisheries Service, Northwest Region. Issued March 1, 1995. [Snake River spring-summer chinook, Snake River fall chinook, and Snake River sockeye salmon]
- ♦ *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. National Marine Fisheries Service, Northwest Region. Issued June 19, 1998. [Listed Snake River chinook and sockeye salmon, and Snake River and Upper Columbia River steelhead trout]
- ♦ *Biological Opinion* for the Effects to Bull Trout from Continued Implementation of Land and Resource Management Plans and Resource Management Plans as Amended by the Interim Strategy for Managing Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana, and Portions of Nevada (*INFISH*), and the Interim Strategy for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (*PACFISH*). U.S. Fish and Wildlife Service, Regions 1 and 6. Issued August 14, 1998. [Bull trout]

In the existing land use plans, lands administered by the BLM or Forest Service are generally intended to provide a mix of natural resource-based goods and services. Management direction focuses on providing sustained levels of resource outputs including timber and wood products, livestock forage, big game and game birds, and minerals in an environmentally prudent manner, while also providing for other uses and values such as aesthetics, recreation opportunities, viewable wildlife, and clean air and water. Portions of the landscape are used for commodity production. Other areas are allocated as wilderness or wilderness study areas, scenic areas, research natural areas, unroaded lands, and conservation areas.

In many current plans, lands suitable for timber production are managed at the stand level. The plans rely on even-aged management practices, favoring early seral species with reduced stand densities, improved growth and yields, restored and maintained soil productivity, and prompt reforestation achieved by using genetically improved trees. Prescribed fire and thinning are also used to manage vegetation and reduce fuel loads and ladders. Subsequent changes in policy, the interim strategies, and Biological Opinions have affected forestland management direction. Management activities now are planned more at watershed scales than at the stand scale, with a shift toward uneven-aged practices where ecologically appropriate. Within riparian areas and watersheds identified as having “priority” for fish values, timber management is greatly reduced.

On rangelands, vegetation management is focused on providing forage for livestock and wildlife, while protecting soil productivity and coordinating with other resource uses. Control and prevention of noxious weeds is an important management intent, and the presence of non-native vegetation species is a management issue over large areas. The addition of Healthy Rangelands direction for BLM-administered lands, as well as interim strategies and Biological Opinions, has increased the focus on vegetation and soil conditions and protection of aquatic and riparian values.

Restoration of vegetation and succession/disturbance regimes are not a priority in existing land use plans. Planned restoration activities such as thinning, prescribed fire, decreased road densities, and watershed restoration are at relatively low levels, with some exceptions. Restoration priorities are set locally, with no intentional effort to coordinate restoration activities across the project area. The Eastside Screens use passive and active restoration in timber sale areas in eastern Oregon and Washington to achieve forest vegetation conditions (such as composition, density, structure, and pattern) that more closely resemble

historical conditions for a given forest potential vegetation group. The interim strategies and Biological Opinions increase the focus on restoration of aquatic and riparian values and initiate a broad-scale effort to prioritize restoration beyond the bounds of individual administrative units.

In the no-action alternative, wildlife habitat management generally results from forest and range management activities. The emphasis in many existing plans is on developing effective wildlife habitat (primarily big game and other game animal habitat) by managing vegetation conditions and distribution of roads. Certain key habitats and habitat components such as late/old growth forests and snags and downed wood are generally planned to exist at relatively low levels (often the minimum) with the intent of maintaining species viability.

In eastern Oregon and Washington, wildlife management in areas supporting timber sales has been modified to incorporate the Eastside Screens. The Screens emphasize retaining/developing late/old structures and patch sizes within historical range of variability; maintaining or developing linkages between old forests; meeting requirements for snags, downed logs, and green tree replacements; retaining larger trees (larger than 21 inches diameter at breast height); and providing habitat for goshawks.

The no-action alternative requires protection of unique habitats and recovery of threatened or endangered species through the appropriate recovery process.

Until the addition of the PACFISH, INFISH, and Biological Opinions, management direction for riparian and aquatic resources focused on water quality and habitat components (pools, large wood, stable banks, and vegetation conditions) through application of Best Management Practices (BMPs). BMPs are a system of accepted practices designed to protect key resources or prevent undesirable impacts, while allowing for existing uses.

Aquatic requirements from PACFISH/INFISH and the Biological Opinions are incorporated throughout most of the project area, and provide a consistent approach to aquatic habitat management. The requirements include:

- ♦ Establishing Riparian Habitat Conservation Areas (RHCAs) and Riparian Management Objectives (RMOs);
- ♦ Incorporating standards and guidelines for resource management applied to riparian conservation areas and upland areas affecting riparian areas;

- ♦ Designating priority watersheds and specific subbasins for protection/restoration activities;
- ♦ Using subbasin analyses and Ecosystem Analysis at the Watershed Scale; and
- ♦ Focusing watershed restoration on degraded habitats to improve long-term conditions.

## Alternative S1 Objectives, Standards, and Guidelines

To provide a point of comparison for the ICBEMP action alternative(s), relevant items from the 64 individual plans were consolidated and paraphrased into a theme and management direction. Direction is highly variable among the plans. The EIS Team compared items in the existing plans that correspond to the broad-scale direction being proposed in the ICBEMP EIS, and made an effort to interpret whether the intent of the direction most closely paralleled the project's definitions of "objective," "standard," or "guideline" (see Key Terms box earlier in this section). Although the exact language used in Alternative S1 may not appear in individual plans, the resulting Alternative S1 is reasonably representative of those parts of existing plans at the broad scale that correspond to direction being proposed in the ICBEMP EIS.

### Step-Down, Adaptive Management, and Monitoring and Evaluation

**S1-O1. Objective.** Make appropriate adjustments in management strategies as new information, technology, and social desires are identified.

**Rationale:** Adaptive management is a continuing process of action-based planning, monitoring, researching, evaluating, and adjusting standards and techniques to improve achievement of the ICBEMP goals and objectives. These standards and

techniques are based on scientific knowledge. Ecosystem management uses an adaptive approach and calls for applying the latest scientific information and professional judgement to develop management plans that will most likely meet desired conditions. To be successful, it must have the flexibility to adapt and respond to new information. Under the concept of adaptive management, new information will be evaluated and decisions made whether to make adjustments or changes as experience is gained from implementing plans. The adaptive management approach will enable resource managers to determine how well management actions meet their objectives and what steps are needed to modify activities to increase success or improve results.

**S1-O2. Objective.** For riparian areas, set measurable objectives and monitoring for key parameters such as stream surface shading, streambank stability, and shrub cover.

**S1-S1. Standard.** Ensure that management activities comply with appropriate regulations and that inspections are conducted in accordance with agency policies and procedures.

**S1-O3. Objective.** Assess the effects of management strategies by monitoring changes in conditions, and take actions as needed to meet plan objectives.

**Rationale:** Monitoring allows detection of undesirable and desirable changes so that management actions can be modified or designed to achieve desired goals and objectives while avoiding adverse effects to ecosystems. Note: Current Forest Service and BLM monitoring programs within the project area are not systemically designed to provide monitoring information needed to evaluate management plans at multiple planning scales. The Biological Opinions (summarized in S1-BO1 through S1-BO80) provide additional direction for aquatic and riparian monitoring that will address multiple planning levels.

# Terrestrial Habitats and Landscape Dynamic Components

## Ecosystem Processes and Functions

### Soils

- S1-O4. Objective.** Plan and conduct land uses and management activities to minimize loss of site potential caused by detrimental erosion, compaction, displacement, puddling, and severe burning.
- S1-O5. Objective.** Maintain at least 80 percent of each area directly affected by management activities in condition of acceptable productivity potential.
- S1-O6. Objective.** Use management practices that ensure:
- ♦ adequate amounts of ground cover to support infiltration, maintain soil moisture storage, and stabilize soils;
  - ♦ permeability rates appropriate to climate and soils; and
  - ♦ adequate nutrient capital and functioning cycles.
- S1-O7. Objective.** Where detrimental effects have occurred, plan and implement rehabilitation to meet soil and water objectives and standards.
- S1-O8. Objective.** Stabilize lands disturbed as a result of soil erosion control activities.

### Noxious Weeds

- S1-O9. Objective.** Integrate noxious weed management into project and activity planning to contribute to the prevention, detection, control, and eradication of noxious weeds.
- S1-S2. Standard.** Plans and actions for control of competing and unwanted vegetation (including noxious weeds) shall be consistent with *Managing Competing and Unwanted Vegetation* (USDA/Forest Service 1988), *Vegetation Treatment on BLM Lands in Thirteen Western States* (USDI/BLM 1991b), *Northwest Area Noxious Weed Control Program* (USDI/BLM 1987), or similar agency direction.

## Fire Management and Air Quality

- S1-O10. Objective.** Manage wildland fire to protect human life and property and to minimize loss of resource values.
- S1-S3. Standard.** Wildfires shall receive a prompt and appropriate suppression response, as defined by the agency.
- S1-S4. Standard.** Priorities for fire suppression shall be the protection of human life, public safety, private property, and improvements or investments.
- S1-G1. Guideline.** Minimum impact suppression methods can be used.
- S1-G2. Guideline.** Prescribed fire can be used to meet vegetation management objectives and to reduce and maintain appropriate fuel profiles. Unplanned ignition may be used if a prescribed fire plan has been developed and the fire is within prescription.
- S1-G3. Guideline.** Consider managing fuel residue profiles at a level to minimize the potential of high intensity catastrophic wildfire and provide for other resource objectives.
- S1-O11. Objective.** Meet state air quality requirements.
- S1-S5. Standard.** Prescribed burning shall be planned and conducted in accordance with State Smoke Management Plans and State Implementation Plans of the Clean Air Act.
- S1-G4. Guideline.** Smoke management mitigation measures may be used to reduce emissions from prescribed burning.
- S1-S6. Standard.** Reduce total emissions from prescribed burns to prevent significant deterioration.
- S1-G5. Guideline.** Prescribed fire and other fuels management may be used to reduce the potential for wildfire emissions.

## Road Management

[NOTE: Additional road management items are listed under the Biological Opinions sections, Road Evaluation and Planning, and Road Construction Actions.]

S1-O12. **Objective.** Provide and maintain reasonable access to National Forest System and BLM-administered lands.

## Forestlands

S1-O13. **Objective.** Use timber management activities to promote horizontal and vertical vegetation diversity to help meet wildlife, aesthetic, recreational, and other objectives.

S1-S7. **Standard.** Allow regulated timber harvest only on lands classified as suitable for timber management. Prohibit timber harvest on lands unsuitable for timber management, except where needed to accomplish other multiple-use objectives.

S1-S8. **Standard.** Selection of appropriate silvicultural systems should:

- ♦ Meet the management objectives and management area or resource emphasis;
- ♦ Permit the production of a volume of marketable trees sufficient to use all trees that meet utilization standards defined in agency guidelines and designated for harvest;
- ♦ Permit the use of acceptable logging methods that can remove logs and other products without excessive damage to the identified desirable retained vegetation;
- ♦ Be capable of meeting or providing special management conditions and achieve particular multiple-use management objectives (such as streamside protection, wildlife needs, and visual enhancement);
- ♦ Permit vegetation control and use appropriate practices to establish desired species, composition, density, and rates of growth of trees and other vegetation needed to achieve objectives;
- ♦ Promote stand structures and species composition that minimizes serious risk of damage caused by mammals, insects, disease, or wildfire, and allows treatment of existing insect, disease, or fuel conditions;
- ♦ Assure that lands can be adequately restocked within time frames; and

- ♦ Be practical and economical in terms of transportation, harvesting, preparation, and administration of timber sales.

S1-S9. **Standard.** Clearcutting should occur only when it is found to be the optimum harvest method.

S1-G6. **Guideline.** The variety of management intensities and silvicultural practices can be used, singly or in combination, and will vary by site conditions and productivity, timber species, resource management objectives and timing of implementation.

S1-G7. **Guideline.** Appropriate silvicultural practices can include site preparation, tree improvement, reforestation, release and weeding, thinning, fertilizing, pruning, sanitation harvest, salvage harvest, even-aged harvests (shelterwoods, seed tree, clearcuts), and uneven-aged harvest (individual tree or group selection). Regeneration and tree stocking standards are defined at the local area.

S1-S10. **Standard.** Lands scheduled for timber harvest using even-aged practices (such as seed tree harvest or clear-cutting) should be managed so that harvest occurs near the point at which growth is maximized (also known as culmination of mean annual increment of growth).

S1-S11. **Standard.** Where appropriate, stagger regeneration in space and time for even-aged areas. Created openings should be separated by blocks of land or areas not classified as a created opening. Harvested areas are not considered a created opening for timber management when tree stocking is above minimum levels, and when trees are four feet tall and free to grow.

S1-S12. **Standard.** Openings created by even-aged harvesting should not exceed 40 acres; exceptions are permitted under catastrophic conditions.

S1-O14. **Objective.** Provide for salvage harvest of timber killed or damaged by events such as wildfire, wind storms, insect and diseases, consistent with management objectives for other resources.

## Forest Vegetation: Eastside Screens

The following objectives and standards described for the Eastside Screens would be applicable to Forest Service-administered lands located in eastern Oregon and Washington.

**S1-S13. Standard.** Timber sales shall be designated to incorporate interim standards for ecosystem analysis and management (some types of timber sales are exempt from consideration under this standard).

**S1-S14. Standard.** The following ecosystem characterization and analysis process shall be used:

- ♦ Characterize the proposed timber sale and its associated watershed for patterns of stand structure by biophysical environment and compare to the historical range of variability.
- ♦ Use the processes and ecosystem characterization steps defined in Appendix B of Eastside Screens (USDA/Forest Service 1994, revised 1995).
- ♦ Identify structural components and biophysical environment combinations that are outside historical range of variability conditions to determine potential treatment areas.

## Old Structure, Snags, Coarse Woody Debris: Eastside Screens

The following objectives and standards described for the Eastside Screens would be applicable to Forest Service-administered lands located in eastern Oregon and Washington. In addition to these items, individual land use plans have specific snags/coarse woody debris direction that was developed during the past 6 to 21 years for individual administrative units.

**S1-S15. Standard.** For timber sales the following process shall be used:

- ♦ Use Scenario A whenever any one type of late and old structure in a particular biophysical environment is below historical range of variability.
- ♦ Use Scenario B when both late and old structural stages within a particular biophysical environment are at or above historical range of variability.
- ♦ Late and old structure can be either

multi-story with large trees or single-story with large trees.

- ♦ Late and old structure stages are calculated separately.

**S1-O15. Objective.** Scenario A: If either one or both of the late and old structural stages fall below historical range of variability in a particular biophysical environment within a watershed, manage to ensure no net loss of late and old structure from that biophysical environment.

**S1-S16. Standard.** Scenario A: Timber sale harvest activities shall not be allowed to occur within late and old structure stages that are below historical range of variability. Harvest of dead trees may be permitted when standards for snags and downed logs are met.

**S1-G8. Guideline.** Scenario A: Some timber sale activities can occur within late and old structure stages that are within or above historical range of variability in a manner to maintain or enhance late and old structure within that biophysical environment. One type of late and old structure may be manipulated to move stands into the late and old structure stage that is deficit if this meets historical conditions.

**S1-O16. Objective.** Scenario A: Outside of late and old structure, maintain and/or enhance late and old structure components in stands subject to timber harvest activities.

**S1-S17. Standard.** Scenario A: For timber sales in conditions outside late and old structure, the following shall be adhered to:

- ♦ All remnant late and old seral and/or structural live trees that are currently greater than 21 inches diameter at breast height shall be maintained within stands proposed for harvest activities.
- ♦ Vegetation structure that does not meet late and old structural conditions shall be manipulated using treatments that move stands toward appropriate late and old structural conditions to meet historical range of variability.
- ♦ Open, park-like stand conditions shall be maintained where this condition occurred historically. Manipulate vegetation to encourage the development and maintenance

nance of large diameter, open canopy structure. (While understory removal is allowed, some amount of seedlings, saplings, and poles need to be maintained for the development of future stands).

**S1-O17. Objective.** Scenarios A and B: Maintain connectivity and reduce fragmentation of late and old structural stands.

**S1-S18. Standard.** The current level of connectivity between late and old structural stands and forest plan-designated “old growth” habitats should be maintained or enhanced by maintaining stands between them that serve the purpose of connections, using criteria for network pattern, connectivity corridor description, length of connection corridors and timber harvest and silvicultural criteria (Appendix B of Eastside Screens 1995).

**S1-S19. Standard.** Stands that do not currently meet late and old structure and that are surrounded by blocks of late and old structure should not be considered for even-aged regeneration or group selection. Non-regeneration or single tree selection in these areas should proceed only if the prescription moves the stand toward late and old structure condition.

**S1-O18. Objective.** Scenario B: Maintain wildlife habitat management options by affecting large and/or contiguous stands of late and old structure as little as possible, while meeting other multiple-use objectives.

**S1-S20. Standard.** Scenario B: Within a particular biophysical environment within a watershed, if the single, existing late and old structural stage is within or above historical range of variability, and if both types of late and old structural stages occur and both are within or above historical range of variability, then timber harvest can occur within these stages as long as late and old structural conditions do not fall below historical range of variability. Late and old structural conditions and attributes should be enhanced as possible, consistent with other multiple-use objectives.

Harvest activities (any and all types being considered) should occur in the following stand types in order of priority:

1. First priority is within stands other than

late and old structure.

2. Second priority is within smaller, isolated late and old structural stands less than 100 acres and/or at the edges (first 300 feet) of large blocks of late and old structural stands (greater than 100 acres).

3. As a last priority some harvesting can occur within the interior of large, late and old structural stands (greater than 100 acres; beyond 300 feet from edge), but is limited to non-fragmenting prescriptions such as thinning, single-tree selection (uneven-aged management), salvage, understory removal, and other non-regeneration activities. Group selection (uneven-aged management) is allowed only when created openings either resemble natural forest pattern openings and/or do not exceed 0.5 acre; regeneration harvest and group selection harvest that do not meet these conditions are not allowed.

**S1-O19. Objective.** Manage dead trees (snags) to provide the required numbers and size of snags throughout the forest to maintain primary cavity excavators at 40 to 60 percent of their potential population in timber production areas and appropriate levels in other areas; leave appropriate levels of green trees to serve as a source of future snags.

**S1-S21. Standard.** For timber sales, the following bullets refer to snags, downed logs, and green tree replacement habitats in timber sales (Appendix B of Eastside Screens, USDA/Forest Service 1994/revised 1995):

- ♦ Snags and green tree replacement trees greater than 21 inches diameter at breast height (or whatever is the representative diameter at breast height of the overstory layer if it is less than 21 inches) should be maintained at 100 percent potential population levels of primary cavity excavators.
- ♦ For lodgepole pine stands, all sale activities shall maintain snags and green replacement/roost trees of greater than 10 inches diameter at breast height at 100 percent potential population levels of cavity excavators. The largest available trees should be left to meet this requirement.
- ♦ Downed logs should be retained at appropriate quantities (see following table) while permitting accomplishment

## Downed Log Requirements for S1-S21.

Species	Piece Length (feet)	Pieces per Acre	Small End Diameter (inches)	Total Linear Length (feet)
Ponderosa Pine	>6	3–6	12	20–40
Mixed Conifer	>6	15–20	12	100–140
Lodgepole Pine	>8	15–20	8	120–160

of fire protection needs for life and property and prescribed burning and without extraordinary measures to meet requirements.

- ♦ Pre-activity (currently existing) levels of downed logs should be left, unless they exceed the quantities listed in the following table. Harvest activities should supplement pre-activity levels of downed logs up to the maximum level shown below. Exceptions can be made where fire protection needs for life and property cannot be accomplished with this quantity of debris left on site.

**S1-O20. Objective.** Scenarios A and B: As a minimum, manage to ensure goshawk species viability by meeting Standard S1-S22; forest plan standards and guidelines that exceed the standards should be used instead of or in addition to Standard S1-S22.

**S1-S22. Standard.** Every known active and historical goshawk nesting site used in the past five years should be protected.

- ♦ Seasonal restrictions on activities near nest sites shall be required for activity types that may disturb or harass goshawk pairs while bonding and nesting.
- ♦ 30 acres of the most suitable nesting habitat surrounding all active and historical nest tree(s) shall be deferred from harvest.
- ♦ A 400-acre “Post Fledgling Area” shall be established around every known active nest site. While some harvest activities can occur within this area, retain at least 60 percent of the area in late and old structural condition or all the late and old structural stands if less than 60 percent should be retained. Enhance younger stands toward late and old structural condition, as possible.

## Rangelands

**S1-O21. Objective.** Make suitable rangelands available for grazing and browse use in coordination with other uses and protection of productivity.

**S1-S23. Standard.** Manage vegetation on allotments or management areas to meet basic plant, plant vigor, and soil needs as first priority.

**S1-S24. Standard.** Use the forage utilization standards defined in agency guides; use levels should be consistent with objectives established by land use plans.

**S1-G9. Guideline.** Set forage utilization standards or stocking rates for livestock, wild horses and burros, and big game for riparian and upland areas based on species type, current allotment condition, and range management strategy.

**S1-G10. Guideline.** Design grazing systems to maintain or improve plant vigor.

**S1-S25. Standard.** Range project plans or allotment management plans and, where applicable, wild horse and burro herd management plans shall be developed, revised, and maintained. These plans establish objectives for managing vegetation resources (including activities needed to achieve the objectives) to achieve desirable riparian conditions (including improvement schedule if needed, grazing system, season of use, class of livestock, stocking levels, forage products and utilization rates, improvements needed to achieve objectives, and coordinating requirements).

**S1-G11. Guideline.** Intensive range management practices including rest

may be used to protect and improve riparian vegetation and fish and wildlife habitats.

**S1-G12. Guideline.** To stabilize soils, improve livestock forage conditions and wildlife habitat, seed poor condition rangelands to a site-specific mixture of native or desirable exotic grasses, forbs, and shrubs. Use seedings to decrease grazing pressure on native range to improve its condition.

**S1-G13. Guideline.** To stabilize soils after wildfire, seed rangelands that have a low potential for natural recovery with a site-specific mixture of native or desirable exotic grasses, forbs, and shrubs.

**S1-G14. Guideline.** Provide periods of rest from disturbance or livestock use during times of critical plant growth to maintain or improve vegetation condition.

**S1-O22. Objective.** On BLM-administered lands, follow the applicable standards for rangeland health and/or guidelines for livestock grazing management as described in Appendix 13 or succeeding direction.

## Aquatic/Riparian/Hydrologic Component

### *Description and Management Intent*

The following sections portray the current aquatic/riparian/hydrologic management direction within the project area. The general management direction section represents current management direction in approved land use plans. This is followed by the interim PACFISH/INFISH direction which amended land use plans. The third section represents reasonable and prudent measures, terms and conditions, and conservation recommendations found within Biological Opinions (NMFS 1995 and 1998, USFWS 1998) on affected land use plans for federally listed (under the Endangered Species Act) Snake River steelhead, sockeye, and spring/summer and fall chinook salmon, Upper Columbia River steelhead, bull trout, and Lost River and shortnose suckers. These Biological Opinion items supplement existing land use plan direction as amended by PACFISH/

INFISH and apply to watersheds with listed aquatic species habitats, priority watersheds, or specific subbasins. Following the Biological Opinions section is Water Quality management direction.

### **Management Direction: General**

**S1-O23. Objective.** Restore watersheds to reverse or arrest adverse impacts to water quality and fish habitat. Areas where fish habitat(s) or water quality have been adversely affected shall be given high priority for corrective treatments that mitigate impacts or rehabilitate these areas.

**S1-O24. Objective.** Provide and maintain a diverse, well-distributed pattern of fish habitat to increase anadromous and inland native fish runs. For example:

- ♦ Meet state water quality standards for stream temperature and streamside vegetation;
- ♦ Maintain sufficient large woody debris to provide for continuous long-term supply in all channels;
- ♦ Promote bank, floodplain, and channel stability to provide resiliency to disturbance and foster aquatic diversity; and
- ♦ Provide pools that are large, well distributed, and persistent during low flows, and conserve or restore channel morphology appropriate to the climate and landform.

**S1-G15. Guideline.** Practices that maintain or promote sufficient residual vegetation and appropriate channel morphology and functions can be used to maintain, improve, or restore riparian and wetland functions.

**S1-O25. Objective.** Achieve riparian and wetland area improvement and maintenance through management of existing uses, wherever feasible.

**S1-O26. Objective.** Limit or mitigate surface disturbance in floodplains, riparian areas, and aquatic habitats to prevent soil movement, loss, and sedimentation.

### **PACFISH and INFISH Direction**

The following items apply to areas identified in decision notices and/or biological opinions for PACFISH, INFISH, and/or BLM statewide Interim

Bull Trout Habitat Conservation Strategies. See Appendix 9 for additional information.

## Aquatic Habitat and Watershed Protection

- S1-O27. Objective.** Manage and provide aquatic habitat to contribute to the maintenance of stocks of anadromous and inland native fish and to ensure consistent, effective, and efficient Endangered Species Act consultation.
- S1-O28. Objective.** Provide protection for all watersheds containing designated critical habitat for listed anadromous fish (Key Watersheds).
- S1-O29. Objective.** Provide a pattern of protection across the landscape with an emphasis on federally listed fish. Include watersheds that have strong assemblages, degraded watersheds with a high restoration potential, and watersheds that provide for meta-population objectives (Priority Watersheds).
- S1-O30. Objective.** Improve current conditions of watersheds by restoring degraded habitat and providing long-term protection to riparian and aquatic resources.

## Riparian Habitat Conservation Areas (RHCAs)

### Timber Management in RHCAs

- S1-S26. Standard.** Prohibit timber harvest, including fuelwood cutting, in Riparian Habitat Conservation Areas (RHCAs), except as described below. Do not include RHCAs in the land base used to determine the Allowable Sale Quantity; however, any volume harvested can contribute to the timber sale program.
- a. Where catastrophic events such as fire, flooding, volcano, wind, or insects cause damage that results in degraded riparian conditions, allow salvage and fuel cutting in RHCAs only where present and future woody debris needs are met, where cutting would not retard or prevent attainment of other Riparian Management Objectives (RMOs), and where adverse effects can be avoided to aquatic resources. Ecosystem Analysis at the Watershed Scale shall be completed prior to harvest, including salvage and

fuelwood cutting, in RHCAs.

- b. Apply silvicultural practices for RHCAs 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 aquatic resources.

### Roads in RHCAs

- S1-S27. Standard.** Cooperate with federal, tribal, state, and county agencies and cost-share partners to achieve consistency in road design, operation, and maintenance necessary to attain RMOs.
- S1-S28. Standard.** For each existing or planned road, meet the RMOs and avoid adverse effects on aquatic resources as described below:
- a. Ecosystem Analysis at the Watershed Scale shall be completed prior to construction of new roads or landings in RHCAs.
  - b. Road and landing locations in RHCAs shall be minimized.
  - c. Initiate development and implementation of a Road Management Plan or a Transportation Management Plan. At a minimum, the plan shall address the following items:
    - ♦ Road design criteria, elements, and standards that govern construction and reconstruction.
    - ♦ Road management objectives for each road.
    - ♦ Criteria that govern road operation, maintenance, and management.
    - ♦ Requirements for pre-, during-, and post-storm inspections and maintenance.
    - ♦ Regulation of traffic during wet periods to minimize erosion and sediment delivery and accomplish other objectives.
    - ♦ Implementation and effectiveness of monitoring plans for road stability, drainage, and erosion control.
    - ♦ Mitigation plans for road failures.
  - d. Avoid sediment delivery to streams from the road surface. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe. Route road drainage away from potentially

unstable stream channels, fills, and hillslopes.

- e. Avoid disruption of natural hydrologic flow paths.
- f. Avoid side casting of soils or snow. Side casting of road materials is prohibited on road segments within or abutting RHCAs.

**S1-S29. Standard.** Determine the influence of each road on RMOs. Meet RMOs and avoid adverse effects on aquatic resources by:

- a. Reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards, that have been shown to be less effective than designed for controlling sediment delivery, that retard attainment of RMOs, or that do not protect watersheds from increased sedimentation.
- b. Prioritizing reconstruction based on the current and potential damage to aquatic resources and their watersheds, the ecological value of the riparian resources affected, and the feasibility of options such as helicopter logging and road relocation out of RHCAs.
- 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 aquatic resources in watersheds and the ecological value of the riparian resources affected.

**S1-S30. Standard.** Improve existing culverts, bridges, and other stream crossings to accommodate a 100-year flood, including associated bedload and debris, where those existing structures would or do pose a substantial risk to riparian conditions. Such improvements should include those structures that do not meet design and operation maintenance criteria, that have been shown to be less effective than designed for controlling erosion, or that retard attainment of RMOs. Priority for upgrading shall be based on risks 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 failures.

**S1-S31. Standard.** Provide and maintain fish passage at all crossings of existing and potential fish-bearing streams.

### ***Livestock Grazing in RHCAs***

**S1-S32. Standard.** Modify grazing practices (for example, accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing) that retard or prevent attainment of RMOs or are likely to adversely affect aquatic resources. Suspend grazing if adjusting practices is not effective in meeting RMOs.

**S1-S33. Standard.** New livestock handling and/or management facilities shall be located outside of RHCAs. For existing livestock handling facilities inside RHCAs, assure that facilities do not prevent attainment of RMOs. Relocate or close facilities where these objectives cannot be met.

**S1-S34. Standard.** Limit livestock trailing, bedding, watering, loading, salting, and other handling efforts to those areas and times that would not retard attainment of RMOs or adversely affect aquatic resources.

**S1-S35. Standard.** Adjust wild horse and burro management to avoid impacts that prevent attainment of RMOs or adversely affect aquatic resources.

### ***Mining in RHCAs***

**S1-S36. Standard.** Avoid adverse impacts to listed species and designated critical habitat from mineral operations. If the Notice of Intent indicates that a mineral operation would be located in an RHCA and could affect attainment of RMOs or could adversely affect listed anadromous fish, then require a reclamation plan, approved Plan of Operations (or other such governing document), and reclamation bond. For effects that cannot be avoided, such plans and bonds must address the following items to attain RMOs and avoid adverse effects on listed anadromous fish: the costs of removing facilities, equipment, and materials; recontouring disturbed areas to approximate pre-mining topography; isolating and neutralizing or removing toxic or potentially toxic materials; salvage and replacement of topsoil; and seedbed preparation and revegetation. Ensure Reclamation Plans contain measurable attainment and bond release criteria for each reclamation activity.

**S1-S37. Standard.** Locate structures, support facilities, and roads outside RHCAs. Where no alternative to siting facilities in RHCAs exists, locate and construct the facilities in ways that avoid impacts to RHCAs and streams and that avoid adverse effects on aquatic resources. Where no alternative to road construction exists, keep roads to the minimum necessary for the approved mineral activity. Close, obliterate, and revegetate roads no longer required for mineral or land management activities.

**S1-S38. Standard.** Prohibit solid and sanitary waste facilities in RHCAs. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in RHCAs exists, and if releases can be prevented and stability can be ensured, then:

- a. Analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics.
- b. Locate and design the waste facilities using the best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in RHCAs.
- c. Monitor waste and waste facilities to confirm predictions of chemical and physical stability, and make adjustments to operations as needed to avoid adverse effects to aquatic resources and to attain RMOs.
- d. Reclaim and monitor waste facilities to assure chemical and physical stability and revegetation, to avoid adverse effects to aquatic resources, and to attain the RMOs.
- e. Require reclamation bonds adequate to ensure long-term chemical and physical stability and successful revegetation of mine waste facilities.

**S1-S39. Standard.** For leasable minerals, prohibit surface occupancy within RHCAs 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 aquatic resources 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 native aquatic species.

**S1-S40. Standard.** Permit sand and gravel mining and extraction within RHCAs only if no alternatives exist, if the action(s) will not retard or prevent attainment of RMOs, and if adverse effects to native aquatic species can be avoided.

**S1-S41. Standard.** Develop inspection, monitoring, and reporting requirements for mineral activities. Evaluate and apply the results of inspection and monitoring to modify mineral plans, leases, or permits as needed to avoid adverse effects on native aquatic species and to eliminate impacts that prevent attainment of RMOs.

#### ***Fire Management in RHCAs***

**S1-S42. Standard.** Design fuel treatment and fire suppression strategies, practices, and actions so as to not prevent attainment of RMOs and to minimize disturbances of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function or aquatic resources.

**S1-S43. Standard.** Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RHCAs. If the only suitable location for such activities is within the RHCAs, an exemption may be granted following a review and recommendation by a resource advisor. The advisor would prescribe the location, use conditions, and rehabilitation requirements, with avoidance of adverse effects to aquatic resources a primary goal. Use an interdisciplinary team, including a fishery biologist, to predetermine incident base and helibase locations during pre-suppression planning.

**S1-S44. Standard.** Prohibit delivery of chemical retardant, foam, or additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor and a fishery biologist, when the action agency determines an escaped fire would cause more long-term damage to fish habitats than chemical delivery to surface waters.

**S1-S45. Standard.** Prescribed burn projects and prescriptions should be designed to contribute to the attainment of the RMOs.

**S1-S46. Standard.** Immediately establish an emergency team to develop a rehabilitation treatment plan to attain RMOs and avoid adverse effects on aquatic resources whenever RHCAs are significantly damaged by a wildfire or a prescribed fire is burning out of prescription.

#### ***Hydro and Surface Water Projects in RHCAs***

**S1-S47. Standard.** For hydroelectric and other surface water development proposals, require instream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage, reproduction, and growth. Coordinate this process with the appropriate state agencies. During relicensing of hydroelectric projects, provide to the Federal Energy Regulatory Commission (FERC) written and timely license conditions that require fish passage and flows and habitat conditions that maintain/restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate state agencies.

**S1-S48. Standard.** Locate new hydroelectric ancillary facilities outside RHCAs. For existing ancillary facilities inside the RHCA that are essential to proper management, provide recommendations to FERC to assure that the facilities would not prevent attainment of the RMOs and that adverse effects on aquatic resources 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 RHCAs to avoid adverse effects on aquatic resources.

#### ***Leases and Permits in RHCAs***

**S1-S49. Standard.** Issue leases, permits, rights-of-way, and easements to avoid adverse effects on aquatic resources and to avoid effects that would be inconsistent with or prevent attainment of RMOs. Where the authority to do so was retained, adjust existing leases, permits, rights-of-way, and easements to eliminate effects that would retard or prevent attainment of the RMOs or adversely affect aquatic resources. If adjustments are not effective, eliminate the activity. Where the authority to adjust was not

retained, negotiate to make changes in existing leases, permits, rights-of-way, and easements to eliminate effects that would prevent attainment of the RMOs or adversely affect aquatic resources. Priority for modifying existing leases, permits, rights-of-way, and easements would be based on the current and potential adverse effects on aquatic resources and the ecological value of the riparian resources affected.

#### ***Fuel, Pesticides, and Herbicides in RHCAs***

**S1-S50. Standard.** Apply herbicides, pesticides, and other toxicants and chemicals in a manner that does not retard or prevent attainment of RMOs and that avoids adverse effects on aquatic resources.

**S1-S51. Standard.** Prohibit storage of fuels and other toxicants within RHCAs. Prohibit refueling within RHCAs unless there are no other alternatives. Refueling sites within RHCAs shall be approved by the Forest Service or Bureau of Land Management and have an approved spill containment plan.

**S1-S52. Standard.** Locate water drafting sites to avoid adverse effects on aquatic resources and instream flows, and in a manner that does not retard or prevent attainment of RMOs.

#### ***Watershed Restoration in RHCAs***

**S1-S53. Standard.** Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to attainment of RMOs.

**S1-S54. Standard.** Design and implement fish and wildlife habitat restoration and enhancement actions in a manner that contributes to attainment of the RMOs.

**S1-S55. Standard.** Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of RMOs or adversely affect aquatic resources. For existing fish and wildlife interpretive and other user-enhanced facilities inside RHCAs, assure that RMOs are met and adverse effects on aquatic resources are avoided. Where RMOs cannot be met or adverse

## Definitions

**Reasonable and prudent measures** — Nondiscretionary measures that are necessary and appropriate to minimize the impact of incidental take of a species.

**Terms and conditions** — Set out the specific methods by which reasonable and prudent measures are to be accomplished.

**Conservation recommendations [CR]** — Discretionary measures to (1) minimize or avoid adverse effects of a proposed action on listed species or critical habitat, (2) conduct studies and develop information, and (3) promote the recovery of listed species.

— Final ESA Section 7 Consultation Handbook, March 1998

effects on aquatic resources avoided, relocate or close such facilities.

### Recreation in RHCAs

- S1-S56. Standard.** Design, construct, and operate recreation facilities (including trails) and dispersed sites in a manner that does not retard or prevent attainment of RMOs and avoids effects on aquatic resources.
- S1-S57. Standard.** Complete Ecosystem Analysis at the Watershed Scale prior to construction of new recreation facilities in RHCAs.
- S1-S58. Standard.** For existing recreation facilities inside RHCAs, assure that facilities or use of facilities will not prevent attainment of RMOs or adversely affect native aquatic species. Relocate or close recreation facilities where RMOs cannot be met or adverse effects on aquatic resources cannot be avoided.
- S1-S59. Standard.** Adjust dispersed and developed recreation practices that retard or prevent attainment of RMOs or adversely affect aquatic resources. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective in meeting RMOs and avoiding adverse effects on aquatic resources, eliminate the practice or occupancy.

### Biological Opinions

*Items in this section include Endangered Species Act requirements as expressed through the Biological Opinions on the Land and Resource Management Plans (LRMPs) as amended by PACFISH and INFISH (National Marine Fisheries Service [NMFS] 1995, NMFS 1998, U.S. Fish and Wildlife Service [USFWS] 1998). Topics that relate to the direction being proposed in this EIS were selected for presentation in this section. Where topics overlapped among the three Biological Opinions, they were paraphrased and combined. These combinations are identified in the following sections. Biological Opinion items are numbered here for reference purposes, without categorization as objectives or standards and with no correspondence to a numbering scheme from the Biological Opinions, although page numbers from the appropriate Biological Opinion are included. The Biological Opinions in their entirety would apply as appropriate under Alternative S1; the summary provided here is for general information only, to enable comparison among the alternatives.*

The Opinions include reasonable and prudent measures, implementing terms and conditions, and conservation recommendations. Reasonable and prudent measures and terms and conditions are either (1) to emphasize and further clarify additional commitments for implementing LRMPs as amended by PACFISH and INFISH aquatic conservation strategies, or (2) become mandatory when and where found appropriate through consultation and/or prescribed by USFWS or NMFS in a site-specific biological opinion. Conservation recommendations are suggestions from the USFWS or NMFS regarding discretionary measures to (1) minimize or avoid adverse effects of a proposed action on listed species

or critical habitat, (2) conduct studies and develop information, and (3) promote the recovery of listed species. The categories of 'reasonable and prudent' and 'terms and conditions' generally are intermingled in the Opinions, so they are not distinguished by category in this section. Where conservation recommendations were identified in the Biological Opinions, they are marked as such here by [CR] following the listing.

Biological Opinion items apply either to watersheds with listed aquatic species habitats, Priority Watersheds, or specific subbasins. The following subsections correspond to these three areas.

### **Biological Opinions: All Watersheds with Habitat for Federally Listed Fish**

The following items derived from the Biological Opinions (NMFS 1995, NMFS 1998, USFWS 1998) apply to both Priority and non-Priority Watersheds. **They apply only to those areas that have federally listed anadromous fish, bull trout, or suckers.** See the Biological Opinions for further details.

#### **Implementation and Monitoring**

- S1-BO1.** Provide a process, including designation of an implementation team, that ensures accountability and full implementation of programmatic aquatic conservation measures at all organizational levels. [NMFS 98, page 83] Include a mechanism for improved monitoring accountability and oversight of management actions that affect listed fish or their habitats, designed to meet the applicable objectives, standards, and guidelines of PACFISH and INFISH. [USFWS, p.94]
- S1-BO2.** Use the Level 1 team consultation process and apply the NMFS and USFWS matrices of pathways and indicators (see Appendix 9) or a similar approach as agreed to by the agencies. Evaluate actions to determine the potential effects on listed fish and to assure interagency coordination. [USFWS, p.94 and p.96]
- S1-BO3.** The results of Ecosystem Analysis at the Watershed Scale and other relevant information shall be applied to conclude whether actions either "meet" or "do not prevent attainment" of the aquatic conservation strategy objectives. The conclusion must be documented and supporting rationale provided. [USFWS p.96]
- S1-BO4.** The Forest Service regional/BLM state levels and the national forest/BLM district levels shall review annually the fiscal year program of work for attainment of fish conservation measures. The Forest Service, BLM, U.S. Fish and Wildlife Service, and National Marine Fisheries Service will mutually agree on the priority of these actions, identify significant shortfalls in funding or staffing, and identify potential adjustment(s) in management activities. They will also mutually develop and implement a strategy when funding or priorities prevent full implementation of the aquatic conservation measures. [NMFS 98, p83]
- S1-BO5.** Through interagency coordination, develop stratified aquatic monitoring plans by subbasin to evaluate impacts of management actions on listed fish. [USFWS, p.96 and NMFS 98, p.84] These plans should address at a minimum both compliance and effectiveness monitoring. Use an interagency group to maximize the utility of monitoring information through a coordinated effort and a defensible sampling design. The interagency groups should establish objectives for the monitoring plans in accordance with PACFISH and INFISH. Goals for the monitoring plans should include maximizing the effectiveness of limited monitoring funds, identifying appropriate scales and levels of monitoring necessary to determine if management actions are meeting PACFISH and INFISH direction, allowing for flexibility as funding and activities change, and identifying how monitoring results should be used to make management adjustments. [USFWS, p.97]
- S1-BO6.** Fully implement the monitoring plans by ensuring monitoring schedules are developed and implemented, with agreement among the Forest Service, BLM, National Marine Fisheries Service, and U.S. Fish and Wildlife Service. [USFWS, p.97 and NMFS 98, p.83] If these mutually agreed-upon schedules cannot be followed, an alternative approach will be developed and agreed to by the interagency group. Implement monitoring commensurate with the level of on-the-ground activities, and provide the U.S. Fish and Wildlife Service and the National Marine Fisheries Service feedback on the effects of activities.

**S1-BO7.** Through interagency coordination, develop stratified grazing monitoring plans. Stratification should be based on grazing intensity and potential for adverse effects on listed fish and designated critical habitat. Develop these plans by subbasin to maximize the utility of monitoring information through a coordinated effort and a defensible sampling design. These plans will be developed by an interagency group, which should establish objectives for the monitoring plans. Goals for the plans should include maximizing the effectiveness of limited monitoring funds, identifying appropriate scales and levels of monitoring necessary to determine if allotments are meeting PACFISH direction, allowing for flexibility as funding and activities change and identifying how monitoring results should be used to make management adjustments. [NMFS 98, p.84]

**S1-BO8.** Grazing monitoring schedules will be developed and implemented for ongoing as well as new range management activities. If monitoring schedules cannot be followed, an alternative monitoring approach will be developed and be subject to approval by the interagency teams. If an alternative monitoring approach is not agreed to in a timely fashion, the matter will be elevated for executive resolution. Until interagency agreement is reached on the alternate monitoring plan, grazing would be permitted only if it has been determined by the appropriate Level 1 team to be not likely to adversely affect listed species or designated critical habitat. [NMFS 98, p.85]

### **Road Evaluation and Planning**

**S1-BO9.** Develop and implement guidance for use by administrative units for minimizing or reducing effects of road management activities on listed fish. [USFWS, p.94 and p.97] Issues that should be addressed in this guidance document include, but are not limited to, road construction, reconstruction, removal, obliteration, and decommissioning, as well as an assessment of unroaded and low density roaded areas in relation to conservation of listed fish. The exact scope, format, and detail of this guidance document should be decided through interagency discussions. Include the following in completing this task:

- ♦ Assessment of road construction and management, including unroaded and

low density roaded areas in relation to conservation of listed fish (unroaded and low density roaded areas include designated wilderness, RARE II areas, or other unroaded areas identified in land use plans, Outstanding Resource Waters, and information contained within the *Assessment of Ecosystem Components* for ICBEMP);

- ♦ Descriptions, locations, and maps of unroaded and low density roaded areas, and existing information on the relative habitat value of the areas for listed fish;
- ♦ Summary and review of existing management direction, and recommendations to senior agency managers regarding at a minimum: need for additional habitat protection, risks to listed fish from developmental activities, priority for subbasin assessments and watershed analyses, connectivity between areas, and restoration priorities;
- ♦ A mutually agreed upon strategy to accomplish any additional habitat protections recommended by the technical/research team. [USFWS, p.97 and NMFS, p.86-87]

Proposed projects requiring road construction in any of these unroaded or low density roaded areas shall be considered to have insufficient analysis for the completion of Section 7 consultation and shall not be forwarded to Level 1 teams until this assessment has been completed. [NMFS, p.87]

**S1-BO10.** Using existing information and road definitions, provide the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) with road inventories on the management units within the area covered by listed fish direction. This information should include a description of road definitions and survey methodology used. Missing information will be provided to NMFS and the USFWS within two years after signing of the Biological Opinion. [NMFS 98, p.85]

**S1-BO11.** Annually update the road inventories, including a reconnaissance protocol for identifying, recording, and prioritizing new problems as they arise. [NMFS 98, p.85]

**Watershed and Habitat Restoration  
Analysis and Actions**

- S1-BO12.** The Forest Service and BLM should work cooperatively with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, state agencies, and tribes to develop priorities and adequately fund restoration. [NMFS 98, p.80]
- S1-BO13.** In cooperation with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, develop multi-year strategies to accelerate restoration of habitat for listed fish. These multi-year/multi-scale restoration strategies shall: (1) be dynamic documents modified annually to reflect priorities and opportunities determined through watershed analyses; (2) include project-specific information (developed at watershed, subbasin, or basin scales); (3) incorporate road restoration information; (4) incorporate restoration opportunities resulting from the roadless assessment; and (5) serve as the source for implementing restoration projects. [NMFS 98, p.88]
- S1-BO14.** Emphasis should be increased on Ecosystem Analysis at the Watershed Scale and the development of a schedule for each unit to complete such analyses in a timely manner. [NMFS 98, p.80]
- S1-BO15.** The Forest Service and BLM shall submit to the National Marine Fisheries Service and the U.S. Fish and Wildlife Service a schedule for the completion of at least one Ecosystem Analysis at the Watershed Scale per management unit (national forest and BLM resource area) per year. The analyses shall follow the protocol in the *Federal Guide for Watershed Analysis* and any updates to that guide. [NMFS 98, p.89]
- S1-BO16.** Conduct subbasin assessments to provide context for habitat status and restoration priorities within subbasins and watersheds. [CR] [USFWS, p.100] In coordination with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, the Forest Service and BLM shall complete at least one subbasin assessment per management unit per year. These analyses will adhere to protocols and provide the products mutually agreed upon by the Forest Service, BLM, National Marine Fisheries Service, and U. S. Fish and Wildlife Service. Goals and objectives identified in subbasin analyses need to be incorporated into action plans at the watershed scale. [NMFS 98, p. 90]
- S1-BO17.** Apply the results of Ecosystem Analysis at the Watershed Scale where required or applicable, and consider expected benefits to listed fish during the design and prioritization of instream habitat enhancement and restoration projects, culvert replacement upgrades, and road decommissioning actions. Assess proposed watershed and habitat restoration actions to ensure that potential short-term adverse effects on listed fish are outweighed by long-term benefits. [USFWS, p.95]
- S1-BO18.** Ensure that the timing of any work within intermittent or perennial stream channels associated with these projects is designed to minimize or reduce short-term adverse effects on aquatic habitat and listed fish. [USFWS, p.95]
- S1-BO19.** Provide documentation of information and criteria used to design and prioritize actions to demonstrate that the timing of in-channel work associated with the subject projects will minimize short-term adverse effects on aquatic habitat, and to demonstrate compliance with applicable objectives, standards, and guidelines of the aquatic conservation strategy. [USFWS, p.98]
- S1-BO20.** To ensure that proposed actions are designed to provide for long-term habitat benefits while avoiding, minimizing, or reducing short-term impacts, use information and recommendations from completed Ecosystem Analysis at the Watershed Scale reports, the most current watershed scale environmental baseline, and the determination of effects of proposed actions using the NMFS/USFWS matrix and checklist (see Appendix 9), or an agreed upon approach. [USFWS, p.98]
- S1-BO21.** Seek to restore or improve connectivity within and between isolated sub-populations of listed fish, except in cases where the risks of non-native species introductions override the risks to continued population isolation. [CR] [USFWS, p.100]
- S1-BO22.** Use all information—including findings from Ecosystem Analysis at the Watershed Scale, and other pertinent information—to determine how Riparian Management Objectives, RHCAs, and standards and

guidelines should be modified to better address the needs of listed fish. [CR] [USFWS, p100]

- S1-BO23.** The Forest Service and BLM will provide leadership in developing partnerships with other federal agencies, with state agencies, tribes, and private entities to implement actions that will lead to the survival and recovery of listed fish populations. [CR] [USFWS, p.101]

### Road Construction Actions

- S1-BO24.** Avoid, reduce, or minimize the adverse effects of road construction, reconstruction, and maintenance on listed fish habitat components, particularly water quality, flow and hydrology, and channel condition and dynamics. Avoid, reduce, or minimize incidental take associated with these adverse effects. [USFWS, p.95 and p.98]

- S1-BO25.** New roads (temporary, semi-permanent, or permanent) in RHCAs shall be minimized to the greatest extent possible, and shall be constructed only where watershed analyses have been completed to document that the roads would not prevent attainment of aquatic conservation strategy objectives. [USFWS, p.98]

- S1-BO26.** Watershed road densities of less than 1.0 mile per square mile, especially where there are bull trout stronghold populations, may be necessary to assure future survival and recovery to self-sustaining populations. [CR] [USFWS, p.100]

- S1-BO27.** Reduce passage problems for bull trout associated with culverts and water diversions. [CR] [USFWS, p.100]

- S1-BO28.** Screen all water intakes appropriately to prevent the entrainment of bull trout of all age classes. [CR] [USFWS, p.100]

### Livestock Grazing Actions

- S1-BO29.** Review, modify, and implement annual operating instructions or term grazing permits to meet appropriate PACFISH or INFISH objectives for those allotments/leases that encompass streams known or expected to contain listed fish. [USFWS, p.95]

- S1-BO30.** When reviewing and modifying grazing actions to minimize or reduce incidental take, amend livestock grazing annual

operating instructions, term grazing permits, or leases to incorporate appropriate criteria for evaluating ecological conditions of affected areas to ensure attainment of aquatic conservation strategy objectives. [USFWS, p.98] As allotment management plans are amended or revised, modify the AMPs to meet appropriate PACFISH or INFISH objectives. [USFWS, p.95]

- S1-BO31.** Develop and implement grazing management plans and practices in areas of known or suspected listed fish spawning to minimize or reduce trampling of redds and other direct and indirect effects that may result in take of the species. [USFWS, p.95] Some actions that may be considered include: numbers of animals, timing and duration of grazing, herding, fencing of riparian areas, or upland water sites. [USFWS, p.99]

### Mining Actions

- S1-BO32.** Minimize/reduce the adverse effects of mining actions (including placer mining, recreational suction dredging, and gold panning) that result in take of the species by implementing all relevant PACFISH and INFISH standards and guidelines. [USFWS, p.96]

- S1-BO33.** For mining operations on BLM- or Forest Service-administered lands that are not required to have an approved Plan of Operation (see 43 CFR 3809.1-4 and 36 CFR 228.4), respond to all mining notices within 10 calendar days by advising the operator that the mining activity shall not cause take of listed fish unless the operator has first obtained an incidental take permit under Section 10 of the Endangered Species Act. The BLM or Forest Service will advise the operator of the actions needed to prevent adverse impacts on listed fish and their habitat. [USFWS, p.98]

- S1-BO34.** For mining operations where the administrative unit has discretion to require a Plan of Operations, require such a plan if the mining operation has the potential to adversely affect listed fish. [USFWS, p.99] Work with the Environmental Protection Agency and the state water quality agency to ensure that draft plans of operation for new mines that have the potential to produce acid rock drainage (either in the ore body, pregnant ore storage area, waste

rock storage area, or mine tailings storage area) are conditioned so that the mines will not adversely affect groundwater or surface water quality in a manner that would adversely affect fish habitat or retard or prevent attainment and maintenance of ecological goals and Riparian Management Objectives. [NMFS 95, p.84] Ensure that the plan complies with applicable minerals management standards and guidelines for the aquatic conservation strategy. [USFWS, p.99]

- S1-BO35.** To protect listed fish habitat, determine whether future development of mining claims, mineral leasing, or sale of mineral materials would adversely affect habitat conditions in currently and historically occupied watersheds necessary for recovery, and use all available administrative authority, including withdrawals, to minimize such impacts. [CR] [USFWS, p.101]
- S1-BO36.** For areas where mining effects on listed fish habitat cannot adequately be mitigated, withdraw these areas from location of new mining claims and prohibit mineral leasing and sales of mineral materials. For existing mining claims and mineral leases in these areas, use all available administrative authority to minimize and mitigate the adverse effects of mining on listed fish. [CR] [USFWS, p.101]

#### **Timber Management Actions**

- S1-BO37.** Analyze, design, and implement timber harvest activities to meet the requirements of PACFISH and INFISH and such additional measures as needed to minimize or reduce incidental take of listed fish, through incorporation of the following terms and conditions:
1. Evaluate effects on listed fish and develop mitigation measures by using: (a) the indicators for listed fish habitat needs contained in the U.S. Fish and Wildlife Service/NMFS matrices or a similar evaluation tool agreed upon by the agencies and (b) information from the scientific literature, models (validated with local data wherever possible), and on-site studies to evaluate slope stability and landslide hazard and risk; and
  2. Develop and implement approaches that

address and minimize potential incidental take of listed fish from fuel storage and transportation associated with timber harvest actions. [USFWS, p.99]

3. Address impacts from the action on water quality, habitat access, habitat elements, channel condition and dynamics, stream flow, hydrology, and watershed conditions. [USFWS, p.96]

#### **Other Management Actions and Land Uses**

- S1-BO38.** The Forest Service and the BLM shall exercise their existing authorities on land management programs with a pattern of adverse effects on listed fish. [NMFS 98, p.87]
- S1-BO39.** Access—including for livestock, off-road vehicles, anglers, and other uses—should be eliminated or adequately restricted during spawning and incubation periods. [NMFS 95, p.83]
- S1-BO40.** Risk of toxic fuel spills should be minimized during transport through RHCAs by using alternative routes where feasible and by taking all other possible precautions. [NMFS 95, p.83]
- S1-BO41.** Assure that water conveyance intakes with the potential to trap or impinge listed fish would meet established intake screening criteria before use is approved. Assure that permits would be authorized or reauthorized only if streamflows are adequate to not retard or prevent attainment of Riparian Management Objectives and would not adversely affect listed salmon. [NMFS 95, p.84]
- S1-BO42.** Following a fire that affected RHCAs in watersheds with designated critical habitat, suppression and rehabilitation efforts should be reviewed to determine whether the requirements and tactics identified in the Fire Situation Analysis or Wildland Fire Situation Analysis were successfully implemented and if the revegetation and rehabilitation of the burned area were successful. [NMFS 95, p.85]
- S1-BO43.** Review effects on steelhead from commercial permits and non-commercial recreational boating and floating for adverse effects on steelhead spawning. Where adverse impacts are reducing steelhead productivity, commercial permits

and non-commercial recreational boating and floating should be modified to reduce or eliminate the adverse effects. [NMFS 98, p.80]

### Biological Opinions: Priority Watersheds

The National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) issued Biological Opinions (NMFS 1995 and 1998, USFWS 1998) on Forest Service and BLM land use plans as amended by the PACFISH and/or INFISH interim strategies. These Biological Opinions require the Forest Service and BLM to identify Priority or Key Watersheds for federally listed salmon, steelhead, bull trout, and Lost River and shortnose suckers within the project area. Habitat and population criteria contained within the Biological Opinions were used to identify Priority Watersheds. The following items have been paraphrased and summarized from the Biological Opinions, which should be consulted for exact language and additional details. These items pertain only to identified Priority or Key Watersheds.

#### Physical and Ecological Conditions

**S1-BO44.** In Priority Watersheds, minimize the risk of degradation to existing physical and ecological conditions, and maximize the probability of maintaining good habitat conditions. Land management actions within these watersheds should demonstrate a high probability that high quality habitats will be maintained, expanded, and reconnected. [NMFS 95, p.74 and p.78]

#### RMOs for Priority Watersheds

In addition to PACFISH/INFISH Riparian Management Objectives (RMOs; see Appendix 9), the Biological Opinions require the following modifications or additions to PACFISH/INFISH RMOs:

**S1-BO45.** In Priority Watersheds, limit stream surface fine sediment (less than 6.4 millimeters in diameter) or fine sediment by depth to less than 20 percent in spawning habitat. Adjust land management practices to reduce fine sediment delivery, increase residual pool volumes, and reduce fine sediment volumes where fine sediment is higher than natural. [NMFS 95, p.75]

**S1-BO46.** In Priority Watersheds, limit cobble embeddedness to less than 30 percent in rearing habitat. [NMFS 95, p.75]

**S1-BO47.** In Priority Watersheds, width-to-depth ratio shall be less than or equal to 10 or consistent with the range for the channel type. [NMFS 95, p.75]

**S1-BO48.** In Priority Watersheds, at least 90 percent of all stream banks should be in stable condition. [NMFS 95, p.76]

#### Mining Actions

**S1-BO49.** In Priority Watersheds, the full extent of authorities should be used to ensure that new mines (including hard-rock, placer, sand and gravel, and other mining operations [ore body, waste rock, spent ore, tailings, roads, milling, chemical storage, housing, etc.]) are located outside of RHCAs. There may be some exceptions for activities with a *de minimis* risk of adverse effects. [NMFS 95, p.78]

**Rationale:** Examples of activities that may pose more than a *de minimis* risk include: (1) new roads, (2) actions with impacts greater than three acres, and (3) actions that cause modifications that cannot be restored within one year.

**S1-BO50.** In Priority Watersheds, watershed analysis should be completed prior to approving plans of operation for new mineral activities outside RHCAs that are likely to adversely affect listed fish, designated critical habitat, or ecological processes and functions. Based on watershed analysis results, proposed plans of operation should be adjusted to prevent degradation of the ecological processes and functions and adverse effects on listed fish and designated critical habitat. [NMFS 95, p.78]

#### Timber Management Actions

**S1-BO51.** In Priority Watersheds, if any salvage or silvicultural activities are proposed within RHCAs that pose more than a *de minimis* risk of adverse effects on listed salmon or critical habitat, it must be demonstrated clearly, based on both Ecosystem Analysis at the Watershed Scale and site-specific analyses, how these actions will avoid adverse effects on listed fish and their habitat and how the activities will not retard or prevent attainment and maintenance of ecological goals and Riparian Management Objectives. [NMFS 95, p.79]

**Rationale:** Examples of actions that pose more than a *de minimis* risk in RHCAs include: (a) machinery-related ground disturbance; (b) cutting of live fire-resistant tree species such as ponderosa pine, Douglas-fir, western larch, or lodgepole pine; (c) cutting of any native species of trees or shrubs that are contributing shade to the stream; and (d) cutting or removal of any large trees from RHCAs that could contribute to maintaining or restoring a natural regime of large woody debris recruitment.

**S1-BO52.** For new/proposed timber sales in Priority Watersheds, equivalent clearcut areas (ECAs) should be evaluated. If the area exceeds 15 percent of the potentially forested area, Ecosystem Analysis at the Watershed Scale should be conducted prior to initiating actions that would increase ECA. Actions that would increase ECA should proceed after Ecosystem Analysis at the Watershed Scale only if there is low to *de minimis* risk of adversely affecting fish habitat and if attainment and maintenance of ecological goals and Riparian Management Objectives will not be retarded or prevented. [NMFS 95, p.80]

**S1-BO53.** For new/proposed timber management actions in Priority Watersheds, Ecosystem Analysis at the Watershed Scale should be conducted prior to reducing RHCA widths. [NMFS 95, p.80]

### Roads

**S1-BO54.** Collaborate with the National Marine Fisheries Service (and the U.S. Fish and Wildlife Service if available) in developing multi-year road restoration strategies for Priority Watersheds. [USFWS, p.94 and NMFS 98 p.85] Restoration strategies will identify key processes needing attention, prioritize key locations and project types, address implementation and scheduling issues, and provide preliminary cost estimates. Subbasin assessments and watershed analyses will be the primary process for integrating and interpreting amended road information, inventories, and other potential information. [NMFS 98, p.85]

**S1-BO55.** For proposed/new roads in Priority Watersheds where road density is greater than two miles per square mile, road mileage

should be reduced and road closure, obliteration, and revegetation should be emphasized. [NMFS 95, p.81]

**S1-BO56.** For ongoing road development actions in Priority Watersheds, it should be demonstrated that new roads are being offset by concomitant reductions in road mileage and road restoration. [NMFS 95, p.81]

**S1-BO57.** Reduce total road densities and prevent any increase in road densities in all priority watersheds containing bull trout. [CR] [USFWS, p.100]

### Roadless Areas

**S1-BO58.** In Priority Watersheds, the functions and values of roadless areas for maintaining and restoring ecological conditions should be carefully evaluated prior to proposing new actions in these areas. Collectively, the actions must pose no more than a *de minimis* risk of degrading these functions and values. [NMFS 95, p.82]

### Watershed Restoration

**S1-BO59.** Restoration activities should initially be focused in Priority Watersheds selected as such because of their restoration potential. [NMFS 95, p.82]

**S1-BO60.** In Priority Watersheds, watershed restoration strategies should be developed for Priority Watersheds within the context of broader area plans (subbasin, Forest, etc.) where possible. [NMFS 95, p.83]

**S1-BO61.** In Priority Watersheds, emphasis should be on implementing multi-agency restoration plans in readily restorable habitat. [NMFS 95, p.83]

**S1-BO62.** In Priority Watersheds, direct restoration of RHCAs or stream channels, including but not limited to additions of large woody debris, should be undertaken only concurrent with a corresponding change to the management regime responsible for the habitat degradation. [NMFS 95, p.83]

**S1-BO63.** In Priority Watersheds, priority should be given to watershed restoration actions that will help improve degraded stream reaches adjacent to or connected to remaining reaches of high quality habitat. [NMFS 95, p.83]

## Biological Opinions: Selway River, Middle Fork Salmon River, and South Fork Salmon River Subbasins

The following items apply only to the Selway River, Middle Fork Salmon River, and South Fork Salmon River Subbasins. See the Biological Opinions for further details.

- S1-BO64.** Maintain and restore the unique ecological features and genetic characteristics of steelhead within the Selway, Middle Fork Salmon, and South Fork Salmon rivers. *[NMFS 98, p.78]*
- S1-BO65.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, develop a schedule and prioritize to close, obliterate and revegetate, or resurface as many existing roads as possible. Existing roads in RHCAs should receive high priority for treatment. If resurfaced, cover the existing native surface open roads with aggregate or pavement to control erosion and sedimentation; stabilize cut-and-fill slopes. *[NMFS 98, p.78]*
- S1-BO66.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, build new roads only to replace existing roads in RHCAs or to directly repair human-caused damage to steelhead habitat streams. *[NMFS 98, p.78]*
- S1-BO67.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, do not widen roads by increasing cut-and-fill slope areas in order to accommodate more traffic and/or larger vehicles than can presently use the road. *[NMFS 98, p.79]*
- S1-BO68.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, do not open closed and revegetated roads for management purposes unless necessary to repair human-caused damage to steelhead habitat. *[NMFS 98, p.79]*
- S1-BO69.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, methods described by Prellwitz (1994) and Hall et al. (1994) should be used to define landslide prone areas, or an equivalent peer reviewed methodology with at least a 90 percent probability of identifying landslide prone slopes should be used. *[NMFS 98, p.79]*
- S1-BO70.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, emphasize containment and confinement rather than control strategies to manage wildfire. *[NMFS 98, p.79]*
- S1-BO71.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, use tractors for fire management only in the immediate vicinity of private property or to protect life, as in the construction of safety zones. *[NMFS 98, p.79]*
- S1-BO72.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, maximize the use of planned ignitions and natural prescribed fire to meet vegetation management objectives. *[NMFS 98, p.79]*
- S1-BO73.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, use draft water from sources where the intake is screened or where no salmon or steelhead are present. *[NMFS 98, p.79]*
- S1-BO74.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, use only those timber harvest methods (such as helicopters and horses) that result in low levels of ground disturbance or that avoid adverse effects on steelhead. *[NMFS 98, p.79]*
- S1-BO75.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, use only existing open roads for timber management, without construction of new landings. *[NMFS 98, p.79]*
- S1-BO76.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, do not harvest timber in RHCAs. *[NMFS 98, p.79]*
- S1-BO77.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, manage for natural bank stability of streams using best available data. *[NMFS 98, p.79]*
- S1-BO78.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, locate holding facilities for domestic livestock outside of RHCAs. *[NMFS 98, p.79]*

- S1-BO79.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, allow motorized use only on open roads and trails designed for such purposes. [NMFS 98, p.80]
- S1-BO80.** In the Selway River, Middle Fork Salmon River, and South Fork Salmon River subbasins, where steelhead spawning has been documented and where disturbance of spawning fish is likely to occur, close streams or affected reaches to commercial and non-commercial recreational boating and floating in any craft from April to June of each year. [NMFS 98, p.80]

[end of Biological Opinion section]

## Water Quality and Hydrologic Processes

- S1-S60. Standard.** Meet or exceed state water quality protection and restoration and federal Endangered Species Act requirements through planning, application, and monitoring of Best Management Practices (BMPs).
- S1-S61. Standard.** Beneficial uses shall be protected by implementing water quality practices, plans, and policies in current memoranda of understanding with the states.
- S1-S62. Standard.** Proposed projects or management actions shall be evaluated for cumulative effects on water quality, water quantity, and stream channels.
- S1-G16. Guideline.** Consider dispersing activities in time and space, where practicable, to the extent needed to meet management requirements.
- S1-S63. Standard.** Where Outstanding Resource Waters are designated by a state or tribe, existing water quality shall be maintained.
- Rationale:** This standard requires the Forest Service and BLM to continue to comply with existing state law. Few waters are currently designated as Outstanding Resource Waters. One water body in Oregon is proposed for designation and none in Washington are currently designated as such. No water in Idaho is currently designated as such, although two water bodies have been recommended to the legislature for legal designation. Under Oregon Administrative Rules, the Department of Environmental Quality developed draft guidance for Outstanding Resource Waters. This guidance states that waters nominated for designation by the Environmental Quality Commission would receive interim protection until they are legally designated and management plans are developed. Water bodies that are designated would be managed for no degradation of existing water quality. No special management is required for proposed water bodies. In Idaho, under Title 39, Chapter 36 of the Health and Safety code, once a water is officially designated as an Outstanding Resource Water, existing activities may continue and shall restore and maintain the current water quality; new or existing nonpoint source activities can be conducted only if they do not lower water quality. An exception would be for short-term or temporary actions that do not alter the character of the water.
- S1-S64. Standard.** Where waters exceed applicable water quality standards, state or tribal anti-degradation requirements shall be met.
- S1-S65. Standard.** Within watersheds with Water Quality Limited Segments (as defined by Section 303(d) of the Clean Water Act), management activities shall be implemented in compliance with state-developed, or, when applicable, EPA-developed total maximum daily loads (TMDLs), with the intent to restore water quality to meet state or tribal water quality standards. Provide an early opportunity for intergovernmental collaboration in the development of TMDLs.

## Terrestrial and Aquatic Species

### Viability and Harvestability

- S1-O31. Objective.** Provide habitat for viable populations of existing native and desirable non-native vertebrate wildlife species.
- S1-S66. Standard.** Old/mature tree habitat (reserve where appropriate or develop replacement habitat where presently unavailable) should be maintained and well distributed across the landscape for indicator species that are

dependent on old forests. Meet key species requirements by managing (reserve) areas of appropriate size and arrangement with adequate larger, older trees; proper stand structures and densities (usually multi-storied); snags and downed logs; associated feeding habitat; and other criteria.

- S1-S67. Standard.** Adequate dead trees (snags) should be left to provide the required numbers and size of snags throughout the forest to maintain primary cavity excavators at 40 to 60 percent of their potential population in timber production areas and at appropriate levels in other areas; leave appropriate levels of green trees to serve as a source of future snags.
- S1-S68. Standard.** Dead and downed logs should be provided in appropriate numbers by size classes to support species that use this resource.
- S1-S69. Standard.** Forest stands and shrub and grassland communities and successional stages should be managed to provide suitable big game habitat(s) cover quality, cover size and spacing, open road densities, and forage quality to meet species needs as defined in a Habitat Effectiveness Index.
- S1-S70. Standard.** Big game habitats, including winter ranges, calving/fawning areas, wallows, and migration areas, should be protected at key times by maintaining desired vegetation structure and characteristics.
- S1-S71. Standard.** Unique or featured wildlife habitats, including cliffs, talus, caves, seeps-springs, bogs, wallows and other wet areas (generally under 10 acres), should be managed to protect their primary values.

### ***Aquatic and Terrestrial Threatened, Endangered, Proposed Species (TEP)***

- S1-O32. Objective.** Contribute to the recovery of federally listed or proposed species (or subspecies or populations) across their range by restoring and maintaining habitat quality, quantity, and effectiveness.

**Rationale:** Section 7 of the 1973 Endangered Species Act, as amended, requires the Forest Service and BLM to manage consistent with and in consultation with listing agencies. Rangewide recovery requires a

higher level of management (for example, collaboration and cooperation among federal, tribal, state, and local agencies) than strictly being in compliance with recovery plans. The Forest Service and BLM recognize special status species and have management strategies in place to prevent further listings.

- S1-S72. Standard.** Habitats shall be managed to recover special status species and prevent the listing of these species as candidate, threatened, or endangered.

**Rationale:** BLM Manual 6840 and Forest Service Manual 2600.

- S1-S73. Standard.** When implementing recovery plans for raptor species, subspecies, and populations that are significantly recovering within the project area, apply standards and guidelines from finalized agency documents that have been contributing to recovery.

**Rationale:** The bald eagle and peregrine falcon are near recovery goals identified in recovery plans. Agencies should continue efforts that been contributing to recovery until species are delisted.

- S1-S74. Standard.** Management activities shall be consistent with uniform planning and management procedures by adopting the resource management guidelines and grizzly bear management situations as established in the Interagency Grizzly Bear Committee (IGBC) Management Guidelines (1986), or its successor.

**Rationale:** Guidelines need to be uniformly applied for consistency of anticipated effects.

- S1-S75. Standard.** Management activities shall be consistent with access management recommendations developed by the Interagency Grizzly Bear Committee (IGBC) Managers Subcommittee for the Cabinet/Yaak and Selkirk Mountains Grizzly Bear Recovery Zones, following NEPA procedures at appropriate scales.

**Rationale:** Access provided by roads increases the vulnerability of grizzly bears to mortality. Proposals for development and use of roads need to be evaluated in this context.

**S1-S76. Standard.** For federal threatened, endangered, candidate, or special status species, use required biological assessment/evaluation procedures and meet consultation requirements. Promote preservation, restoration and/or maintenance of their habitats.

areas with local governments, agencies, and landowners.

**S1-O34. Objective.** Foster public awareness of, involvement in, and support for national forest and BLM district land management objectives and programs.

**S1-O35. Objective.** Support strategies that enhance rural community economic advancement; define complementary roles and implement programs that best serve the public. Assist in providing developmental, tourism, and recreational activities that help diversify rural economies and improve quality of life that attracts in-migration related to amenities.

## Social-Economic-Tribal Component

**S1-O33. Objective.** Coordinate management of lands, resources, and activities administered by the BLM or Forest Service with local, state, and federal agencies; private landowners; American Indian tribes; and interest and user groups.

**S1-S77. Standard.** Provide a predictable supply of timber and other forest products within sustainable limits of the ecosystem(s).

**S1-G17. Guideline.** Developing and strengthening partnerships can be emphasized while managing and enhancing resource use (fish, wildlife, recreation, others).

**S1-S78. Standard.** Provide a predictable supply of forage for livestock and wild horses within sustainable limits of the ecosystem.

**S1-G18. Guideline.** Coordinate fire management activities in rural interface

**S1-O36. Objective.** Provide for ceded land rights and treaty privileges of American Indians.

**S1-O37. Objective.** Consult and coordinate planning and management activities with the tribes.

## Alternatives S2 and S3

### Key Features That are the Same as the Draft EIS Alternatives 3–7

Five goals were developed for the action alternatives in the Eastside and UCRB Draft EISs. These goals have been carried forward, unchanged, to the Supple-

mental Draft EIS. The ICBEMP goals are broad, general statements of intent that were derived from the Purpose and Need statement, issues identified through the initial scoping processes, and the Project Charter. All of the alternatives address these goals to some extent and in varying amounts of time. The extent to which each goal is met by an alternatives is part of the analysis of consequences discussed in Chapter 4. The results of the analysis will help in selecting an alternative for the ROD.

#### Goals

**Goal 1:** Sustain, and where necessary, restore the health of forest, rangeland, aquatic, and riparian ecosystems.

**Goal 2:** Provide a predictable, sustained flow of economic benefits within the capability of the ecosystem.

**Goal 3:** Provide diverse recreational and educational opportunities within the capability of the ecosystem.

**Goal 4:** Contribute to recovery and delisting of threatened and endangered species.

**Goal 5:** Manage natural resources consistent with treaty and trust responsibilities to American Indian tribes.

# Key Features that Differ from Draft EIS Alternatives 3–7

The ICBEMP Supplemental Draft EIS attempts to improve clarity, focus, and implementability of the proposed management direction using the feedback received on the Draft EISs as a guide. The revised alternatives:

- ♦ Integrate landscape dynamics, terrestrial, aquatic, and socio-economic-tribal components into one ecosystem management strategy;
- ♦ Protect important aquatic and terrestrial habitats;
- ♦ Identify priority areas for restoration; and
- ♦ Provide a better link to existing management direction and step-down processes, combining some land designations with increased managerial flexibility on the local level.

The following key features distinguish Alternatives S2 and S3 from Alternatives 3 through 7 in the Draft EISs:

1. **Focus** - Narrowed focus, limited to issues for which there is a compelling and critical need to direct resource management at the basin scale. Examples of such critical and compelling issues include but are not limited to: long-term viability for wide-ranging fish and wildlife species, water quality, rapid spread of noxious weeds, uncharacteristic wildfire, and social and economic needs.
2. **Geographic/spatial elements** - Specific important habitats with intact succession/disturbance regimes are identified and mapped, including: aquatic core habitat network (aquatic [A1, A2] subwatersheds) and terrestrial source habitats (terrestrial [T] watersheds). Areas are also identified as having a broad-scale high priority for restoration.
3. **Hierarchy of direction** - Management direction is hierarchical in that some types of direction take precedence over others (see the following section). The hierarchy helps to clarify which direction would apply should two management designations overlap with each other.
4. **Restoration strategy** - Broad-scale restoration direction is provided. Some of this broad-scale direction is functional in nature (relates primarily to aquatic or terrestrial habitats, for example); however, most of the broad-scale direction

integrates ecological needs and opportunities with social and economic (including tribal) needs and opportunities. See the section on Hierarchy of Direction, below, for additional information.

5. **Risk management** - More emphasis is placed on managing various types and levels of risk to resources. The ICBEMP integrated ecosystem management strategies could also be called risk management strategies. The location, timing, and intensity of management actions can vary depending on what level of risk is acceptable at the local level. Determining acceptable levels of risk entails considering risks from conducting management actions and from taking no management actions, short-term risks and long-term risks, and fine-scale risks in the context of larger-scale processes and conditions. All these aspects of risk, along with potential benefits, must be considered before the trade-offs are fully understood.

## 6. Implementation plan

- ♦ *step-down process* showing what analysis is needed (mid-scale analysis [Subbasin Review], Ecosystem Analysis at the Watershed Scale [EAWS], or site-specific NEPA analysis) and links among decision levels;
- ♦ a *monitoring process* linked to step-down (see Appendix 10);
- ♦ increased focus on interagency and intergovernmental *collaboration*;
- ♦ a *budget strategy* showing funding assumptions.

## Hierarchy of Management Direction

Management direction is either base level (applies to all Forest Service- and BLM-administered lands in the project area), restoration (applies wherever restoration occurs), or geographically specific (applies only to certain mapped areas; in this EIS, these areas are aquatic A1 and A2 subwatersheds and terrestrial T watersheds). These different types of direction are intended to be consistent. When there are conflicts, the most restrictive direction prevails.

### Base Level Direction

The intent of base level direction is to *maintain* ecosystems and resources that are in good condition, and prevent further deterioration of ecosystems and resources that are not in good condition until they can be actively or passively restored. Base level direction

would amend or augment management direction in existing land use plans, although the specific location, timing, and intensity of management actions required to achieve the broad-scale ICBEMP direction still would be determined by local Forest Service and BLM managers. Acceptable levels of short-term and long-term risk from conducting management actions and from conducting no management actions must be considered when making these finer-scale decisions.

### **Restoration Direction**

The intent of restoration direction is to *improve* resource conditions that are not functioning properly by focusing restoration activities in the most efficient and effective manner possible. Restoration activities are intended to address and benefit multiple ecosystem components, including the needs of communities and American Indian tribes. Restoration direction applies wherever restoration activities occur, such as in subbasins identified as high restoration priority and in areas with locally identified restoration priorities.

Subbasins with functional (one resource, such as aquatics) and integrated (many resources) priorities have been identified and mapped as having a high restoration priority from a broad-scale perspective. This was done to assist national forests and BLM districts in prioritizing local restoration activities and to assist in their budget planning processes.

Certain subbasins were identified as high restoration priority because they have high risk to fish and wildlife and their habitats from natural disturbances, there is good opportunity to reduce those risks through restoration activities, and some of the restoration actions would provide employment and economic opportunities for isolated and economically specialized communities and tribal communities. *In Alternative S2*, 40 high restoration priority subbasins were identified. Thirteen of the 40 subbasins were included because of the opportunities to expand and improve extent, condition, and connectivity of aquatic habitat. *In Alternative S3*, 51 high restoration priority subbasins were identified. Eleven subbasins were added to the 40 subbasins in Alternative S2 because of they would add additional employment and economic opportunities for communities, including tribal communities.

### **Geographically Specific Areas**

Several areas (called aquatic A1 and A2 subwatersheds and terrestrial T watersheds) were identified and mapped because of their importance for fish and wildlife and their habitats. The management intent of these geographically specific areas is to

secure, or protect, the habitats from adverse effects in the short term from management activities, and to build upon, or restore, the habitats in the long term, in part by decreasing the likelihood of uncommon natural disturbance (such as from unusually severe wildfire). Management direction for these mapped areas is generally more restrictive than base level or restoration direction, and would take precedence if there were a conflict in direction. Management direction for riparian conservation areas and threatened, endangered, or proposed species also falls into this category.

*Management descriptions, intent, and direction that is specific to Alternative S2 only or to Alternative S3 only is indented and/or italicized. Management descriptions, intent, and direction that apply to both Alternatives S2 and S3 is not indented or italicized.*

## **Management Direction— Step-Down, Adaptive Management, and Monitoring**

### **Step-down**

#### **Description and Management Intent – Step-down**

Step-down is the process of applying broad-scale science findings and land use decisions to site-specific areas using a hierarchical approach of understanding current resource conditions, risks, and opportunities. Information developed through analysis at different scales provides additional context that is beneficial in understanding how projects can be developed that meet multiple management objectives, including reducing risks to sensitive or unique resources.

Analysis of ecosystems is a systematic way of gathering, organizing, and understanding information within a selected geographic area. It is not a decision-making process, but it does provide the information and context to make well informed decisions. With this information, managers can better understand and disclose the effects of their decisions. It is useful in guiding the type, location, and sequencing of appropriate management activities within a watershed, as well as in helping identify inventory and monitoring needs. Information gained from this hierarchical analysis approach may also be used in future amendments and revisions of land use plans.

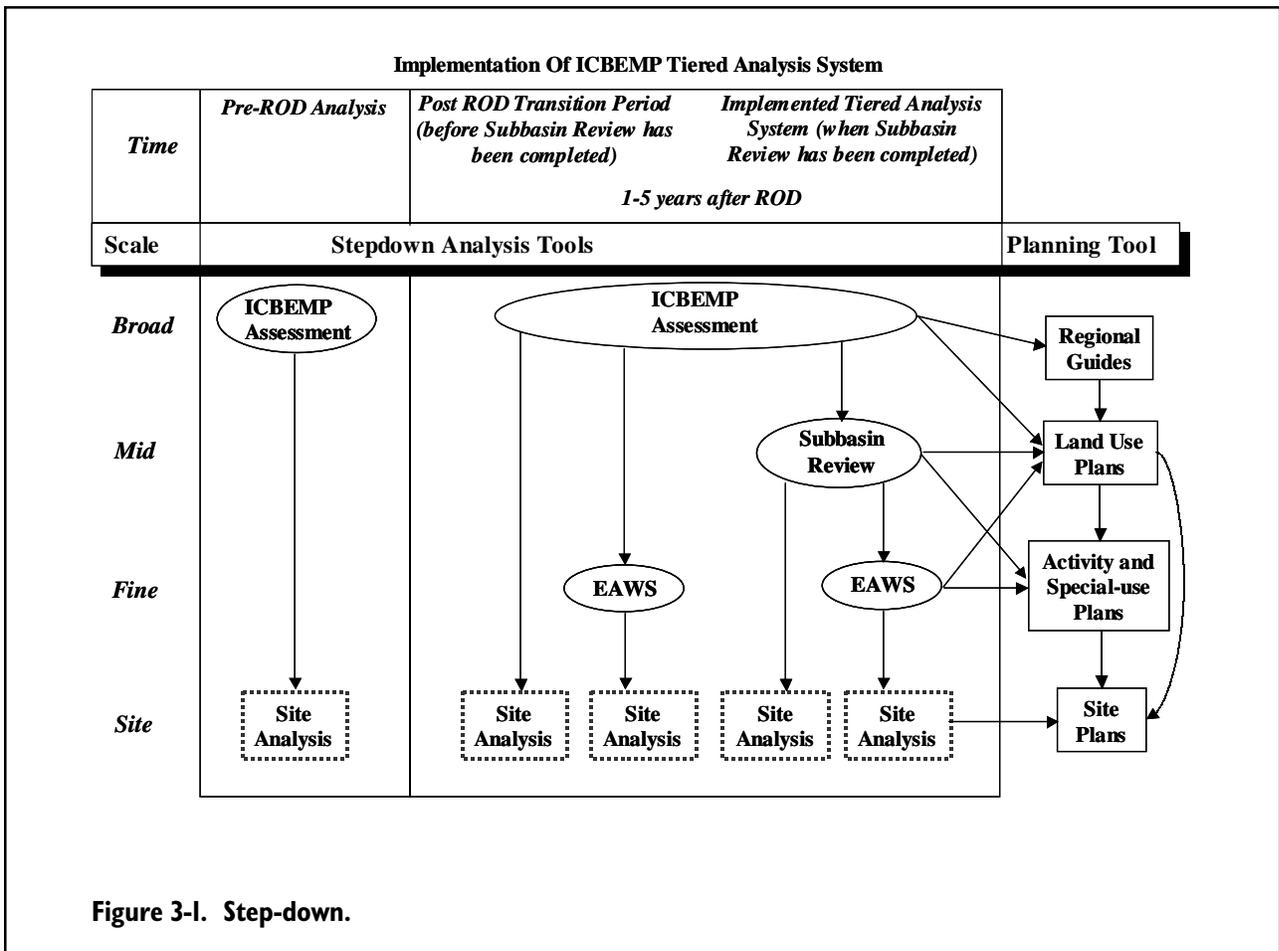
***Hierarchical step-down analysis (programmatic planning, Subbasin Review, EAWS, and site-specific NEPA analysis) provides information necessary to ensure that site-specific decisions will implement broad-scale, outcome-based direction, while giving managers the discretion necessary to select the action that also fits the situation on the ground.***

- ♦ Mid-scale analysis (Subbasin Review);
- ♦ Watershed-scale analysis (Ecosystem Analysis at the Watershed Scale);
- ♦ Site-specific NEPA analysis (environmental analysis or environmental impact statement).

It is intended that these analyses be conducted in certain circumstances to reduce the overall risks to resources, while maximizing the opportunities to conserve and restore resource conditions. In essence, the step-down process is a risk management approach, which addresses risks at different scales. The ICBEMP EIS addresses broad-scale or regional risks, whereas the various step-down analysis processes address finer-scale risks. Subregional risks are addressed through land use plans, mid-scale or landscape risks through Subbasin Review and/or EAWS, and site-specific risks through site-specific NEPA analysis. Under this approach, regional, subregional and landscape analyses and decisions provide context for the remaining risks to be addressed at the site level. Through a multi-level analysis and decision process, all levels of risk would

Four levels of analysis below the basin-level analysis conducted by the ICBEMP are intended to provide the context to appropriately implement these broad-level decisions on individual national forests and BLM districts. They include:

- ♦ Subregional analysis (programmatic, or broad overview, EIS; for example, BLM resource management plans or Forest Service land and resource management plans);



be addressed, with management activities focused on risks at the site level where the most detailed analyses are conducted. The hierarchical analysis process will be phased in over five years. Figure 3-1 illustrates how analysis will be done during the phase-in period.

Since site-specific NEPA analysis and programmatic planning analyses have been widely used since the inception of NEPA in 1969, FLPMA in 1976, and NFMA in 1976, further elaboration of these analysis requirements or techniques is not included in the following step-down discussion. However, a few components of site-specific analyses that are particularly important to an ecosystem management strategy warrant some discussion. Mid-scale and watershed-scale analyses can provide valuable context, focus, and information for site-specific NEPA analysis.

Documenting the proposed and alternative actions and the analysis of their impacts, including cumulative impacts, is particularly important. Documentation of the context provided by mid- and fine-scale analyses that are relevant to site-specific analysis and decisions is also important. That context includes information which facilitates management of risk to resources from natural events and management actions at different scales (geographic and temporal). Subbasin Review and EAWS enhance the understanding of risk and opportunities and provide a hierarchically scaled context and information base of support for site-specific analysis and decisions. Decisions regarding where and when to take short-term risks, particularly where listed or proposed species are present, need to be made to the extent possible within the context of information generated through the step-down process, with clear documentation of analysis and rationale.

**Alternative S2 Only.** In Alternative S2, one of the main emphases is to minimize short-term risk, especially to threatened, endangered, or proposed species, important species habitats, and riparian areas. Therefore, the intent is to put a greater emphasis on conducting analyses, such as Subbasin Review and Ecosystem Analysis at the Watershed Scale (EAWS), prior to conducting management activities.

**Alternative S3 Only.** In Alternative S3, there is more of an emphasis to address long-term risk to resources from uncharacteristically severe disturbances more rapidly than Alternatives S1 or S2. This would occur by allowing more activities to occur prior to conducting analyses, such as Subbasin Review and Ecosystem Analysis at the Watershed Scale (EAWS). These landscape treatments would be planned and designed during appropriately scaled analysis as

part of or preceding the required NEPA analysis. Important habitats are still protected or maintained.

Collaboration is also important during step-down processes. By conducting mid- and fine-scale analyses in a collaborative environment, management opportunities and priorities can be agreed on earlier in the process, which leads to decisions that have more support at finer scales. At the same time, collaboration can be a challenge. The Forest Service and BLM must initiate collaboration to demonstrate a good faith effort during step-down. However, the step-down processes cannot stop if all the appropriate parties cannot come to agreement on certain elements of a decision or if one or more partners cannot or do not remain involved throughout the process.

### Description and Management Intent — Mid-scale

The *Assessment of Ecosystem Components in the Interior Columbia Basin* found that the mid scale is an important scale for addressing management of ecosystem components, because many important relationships and patterns are evident only at the mid scale. The following direction to complete Subbasin Review as an initial step in implementing broad-scale decisions through site-specific actions is intended to provide this mid-scale understanding of relationships and patterns within the subbasin (4th-field HUC, approximately 800,000—1,000,000 acres) or groups of subbasins. By conducting Subbasin Review, decision makers can better balance the short- and long-term risks to resources and provide more predictable and sustainable levels of goods and services for people and communities. Information from Subbasin Review is used to identify opportunities and priorities, focus finer scaled analyses, and provide context for future decision-making at the land use planning and project levels.

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***By conducting Subbasin Review, decision makers can better balance the short- and long-term risks to resources and provide more predictable and sustainable levels of goods and services for people and communities.***

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Specifically, Subbasin Review is intended to be conducted collaboratively to:

- ♦ Review information provided in the *Assessment of Ecosystem Components, Integrated Scientific Assessment*, and other applicable science information, and existing local information;

- ◆ Identify data gaps;
- ◆ Identify local resource issues, and describe how they interact with each other and with broad-scale issues within the subbasin;
- ◆ Identify the need for Ecosystem Analysis at the Watershed Scale (EAWS), roads analysis, and other analyses within the subbasin(s);
- ◆ Prioritize/schedule EAWS and other analyses that are needed within the subbasin(s);
- ◆ Provide mid-scale context for finer-scale analyses and activities, including EAWS and roads analysis;
- ◆ Identify opportunities for land use plan amendment or revision to meet broad-scale and more localized objectives;
- ◆ Identify and prioritize risks and opportunities to meet broad-scale and more localized objectives through site-specific management actions;
- ◆ Assess risks and opportunities to reduce potential unwanted effects from management actions and land uses (for example, road-related adverse effects) and to better balance short- and long-term, and mid- and fine-scale risks;
- ◆ Establish context for assessment of effects on environmental justice (Executive Order 12898) and civil rights at mid- or fine-scale decision-making levels;
- ◆ Characterize landscape elements that contribute to or influence hazards and risks associated with roads;
- ◆ Identify opportunities for pooling interagency (federal agencies) and intergovernmental (tribes, states, counties, cities) resources for prioritizing and completing EAWS and other analyses;
- ◆ Consider state, county, tribal, or other agency restoration priorities;
- ◆ Invite tribal participation to identify and characterize resources and places of value, solicit data and other information, and solicit tribally identified priorities and restoration opportunities. Use this information along with the broad-scale tribal restoration priority subbasins map (see Map 3-7 later in this chapter) to assist in prioritizing local restoration activities;
- ◆ Identify and map important areas and dispersal corridors for wide-ranging carnivores;
- ◆ Identify areas, priorities, and opportunities for restoration to create a larger or more contiguous network of connected, productive aquatic/riparian and/or terrestrial habitats. Use broad-scale aquatic/riparian restoration priorities (see Map 3-3 later in this chapter), broad-scale old forest/rangeland habitat restoration priorities

subbasins (see Map 3-5 later in this chapter), A2 subwatershed restoration priorities, location of A1 and A2 subwatersheds, and location of source habitats that have declined substantially in geographic extent from historical to current periods in T watersheds.

Because of the variability of conditions within the interior Columbia Basin, the broad-scale ICBEMP direction is outcome based rather than prescriptive. Ecosystems are characterized at different scales, as appropriate, through hierarchical analysis (programmatic planning, Subbasin Review, EAWS, and site-specific NEPA analysis). This provides information necessary to ensure that site-specific decisions implement broad-scale, outcome-based direction, while giving managers the discretion necessary to select the action that also fits the situation on the ground. Measurable indicators will be used, where appropriate, to provide context and decision support to determine the appropriateness of management activities with respect to the broad-scale objectives.

Landscape characterization includes historical as well as current conditions of the land; therefore, it should also include people who have used the area historically and their relationship to the land and resources, as well as people who currently use the land. Understanding of how and where people historically lived and worked in an area can be improved by knowing the types of uses that existed in a given area through time. For example, historical mining areas, old railroad beds, ceded lands, Civilian Conservation Corps structures, or the presence of a nearby Japanese internment camp might be indicative of a particular minority or ethnic group that used and related to the land in a particular way. These uses/features might provide the impetus to seek out representatives of these groups to better describe their relationship with the land/resources from historical to current times as a part of characterization. This information can then be used to address subsequent NEPA analysis and decision-making requirements.

Subbasin Review is intended to be a dynamic process whereby risks, opportunities, and priorities are revisited when issues or conditions change. Information can be added to respond to additional issues as they arise, or as information is developed through other avenues.

To assist in understanding the intended outcome of Subbasin Review, as well as to help field offices carry out their responsibilities to conduct these reviews, a draft guidebook has been prepared to guide Subbasin Review. This guidebook describes a process that has been tested and would meet the purpose of Subbasin Review as described above. It includes a series of

questions relative to the key resources addressed by the ICBEMP, including aquatic, terrestrial, landscape dynamics, and socio-economic resources, that are intended to help focus the review. While these questions have been determined to be appropriate for a Subbasin Review, they can be answered in different ways, depending upon the resources at issue and the type of existing data available to address the issue. Administrative units are encouraged to use creative thinking in addressing these questions, identifying opportunities, and developing priorities.

### Objectives, Standards, and Guidelines — Subbasin Review

**B-O1. Objective.** Use mid-scale information on the status, risk, and opportunities within a subbasin as context for finer scale analysis and to identify and prioritize types of management activities appropriate to meet broad-scale objectives. Use a collaborative approach and broad- and mid-scale information to identify and help balance short- and long-term risks to resources, to identify opportunities to conserve and restore resource conditions, and to produce goods and services for people and communities within the subbasin.

**Rationale:** *Status* is defined here as the condition of the resources relative to the historical condition. *Risk* includes both short- and long-term risks of adversely affecting the current condition of these resources. *Opportunities* are situations where improvements in resource condition or a reduction in risk can be achieved through some form of subsequent management decision. These decisions will be made either through adjustments in land use plans or through project decisions, both of which include additional analysis and public involvement. In certain cases, Ecosystem Analysis at the Watershed Scale will be needed or required prior to developing site-specific proposals. This analysis is intended to provide additional information to decision makers so they can better balance the short- and long-term risks to resources.

**B-S1(S2). Standard for Alternative S2 Only.** Subbasin Review shall be conducted to provide the mid-scale context outlined in B-O1 and as described in the Subbasin Review Guide (in development). Subbasin Review shall be used to: (a) prioritize and provide context for EAWS and other analyses; (b) within high restoration priority subbasins, identify the schedule for completing EAWS that are needed in the subbasin; (c) identify opportunities for future activities and land use plan amendments/revisions; (d) understand the potential for effects

from possible activities; (e) identify data gaps; and (f) identify opportunities to pool resources.

**Rationale:** While the context provided by Subbasin Review will help decision makers balance short- and long-term risks to resources within the subbasin, it is not the intent of B-S1(S2) to prohibit resource management activities from occurring prior to its completion. Rather, as subbasin reviews are complete, information from these analyses will be used to provide context for other analyses and for future land use plan and project decisions. In Alternative S2 several conditions trigger EAWS (see Standard B-S5[S2]). Subbasin Review can be used to identify priorities and schedules for conducting additional EAWS if they are determined to be appropriate and have not already been triggered.

**B-S1(S3). Standard for Alternative S3 Only.** Subbasin Review shall be conducted to provide the mid-scale context outlined in B-O1 and as described in the Subbasin Review Guide (in development). Subbasin Review shall be used to: (a) prioritize and provide context for EAWS and other analyses; (b) identify the schedule for completing EAWS that are needed in the subbasin; (c) identify opportunities for future activities and land use plan amendments/revisions; (d) understand the potential for effects from possible activities; (e) identify data gaps; and (f) identify opportunities to pool resources.

**Rationale:** While the context provided by Subbasin Review will help decision makers balance short- and long-term risks to resources within the subbasin, it is not the intent of B-S1(S3) to prohibit resource management activities from occurring prior to its completion. Rather, as Subbasin Reviews are complete, information from these analyses will be used to provide context for other analyses and for future land use plan and project decisions. In Alternative S3 there are no “triggers” for EAWS; therefore, Subbasin Review will serve to identify priorities and schedules for conducting necessary EAWS.

**B-S2. Standard.** Subbasins with less than five percent BLM/Forest Service ownership (Map 3-1) or areas where the collaborating partners agree the intent of Subbasin Review has been met through other analytical processes are exempt from B-S1(S2) and B-S1(S3) requiring Subbasin Review. BLM and Forest Service administrative units shall initiate collaboration with National Marine Fisheries Service, U. S. Fish



**Map 3-I. Subbasins With Less Than 5% Forest Service- or  
BLM-administered Land.**

and Wildlife Service, and EPA to discuss the general condition of BLM and Forest Service resources within the subbasin, the role these lands play within the subbasin, and the potential to reduce risks or provide opportunities to meet broad-scale objectives for the subbasin. The need to conduct additional mid-scale or finer scale analyses and the potential to pool resources shall also be discussed.

**Rationale:** Mid-scale analysis, landscape analysis, or Ecosystem Analysis at the Watershed Scale has already been conducted in many places within the project area. Where the collaborating partners agree that the intent of Subbasin Review (including identifying resource conditions and risks, prioritizing management opportunities, and addressing issues such as connectivity and interrelationships within the subbasin) has been met through previous analysis, efforts should focus primarily on gaining a broader understanding of the conditions, risks, and opportunities. Collaboration can increase awareness and understanding among the partners concerning what analysis has been completed, the results of these analyses, and a mid-scale view of the resources, issues, and opportunities within the subbasin. In this case, reanalyzing the information may not be necessary to accomplish the intent of Subbasin Review. Collaboration can enhance interagency awareness and understanding; however, if all collaborating partners cannot or do not participate, the land management agencies (BLM and Forest Service) will continue with the step-down process.

**B-S3. Standard.** Conduct Subbasin Review using a subbasin (4th-field HUC, approximately 800,000—1,000,000 acres) or groups of contiguous subbasins as the analysis unit, except where alternative analysis units have been agreed to collaboratively.

**B-S4(S2). Standard for Alternative S2 Only.** Subbasin Reviews shall be completed for subbasins identified as high priority for restoration (see Map 3-8 later in this chapter) within two years following the signing of the ICBEMP Record of Decision. All other Subbasin Reviews or requirements described in B-S1(S2) shall be completed within five years of the signing of the ICBEMP Record of Decision.

**Rationale:** See the Description and Management Intent for Restoration direction for a discussion of broad-scale integrated priority subbasins. Conducting Subbasin Reviews in these areas first ensures that the mid-scale level of analysis occurs first where it is anticipated that the most activity will occur.

**B-S4(S3). Standard for Alternative S3 Only.** Subbasin Reviews or requirements described in B-S1(S3) shall be completed within five years following the signing of the ICBEMP Record of Decision.

**Rationale:** While there will still be a lot of activity in subbasins prioritized for restoration, Alternative S3 provides greater flexibility for the scheduling of Subbasin Review.

### Description and Management Intent — Watershed-scale

Ecosystem Analysis at the Watershed Scale (EAWS) is an analytical process that characterizes the human, aquatic, riparian, terrestrial, and other special features, conditions, processes and interactions that occur within a watershed (*Ecosystem Analysis at the Watershed Scale, Federal Guide for Watershed Analysis*, revised August 1995, version 2.2, Portland, Oregon [*Federal Guide for Watershed Analysis*]). It is an issue-driven process that provides information concerning resource conditions, risks, and opportunities in a systematic way, thereby enhancing agencies' ability to estimate direct, indirect, and cumulative effects of management actions. EAWS follows the six-step process outlined in the *Federal Guide for Watershed Analysis*. Collaboration is to be initiated by the Forest Service and BLM.

EAWS is intended to be used as a tool for identifying management actions needed to meet overall management objectives, and at the same time provides information useful in managing the mix of short- and long-term risks to resources that occur within the watershed. It is intended to be conducted where it adds value by contributing information needed for planning, locating, and designing activities across a watershed.

**Alternative S2 Only.** While standard B-S5(S2), described below, will “trigger” the need to conduct EAWS prior to initiating project planning and implementation in some areas, it is intended that Subbasin Review (described in standard B-S1(S2)), and EAWS be used to identify actions that would best meet the management objectives within a watershed. In this way, actions are proposed within the context provided by the mid- and watershed-scale analyses, and managers will have a better opportunity to balance the needs of resources and humans and be less likely to negatively impact threatened, endangered, or proposed aquatic species or species at risk.

**Alternative S3 Only.** *It is intended that Subbasin Review (described in standard B-S1[S3]) and EAWS be used to identify actions that would best meet the management objectives within a watershed. In this way, actions are proposed within the context provided by the mid- and watershed-scale analyses, and managers will have a better opportunity to balance the needs of resources and humans with potential effects on resources.*

Information gathered through EAWS is valuable for identifying riparian conservation area (RCA) criteria as described in B-S35(S2) and B-S35(S3); however, other programmatic planning processes also may be used to identify RCA criteria. Information from these analyses, where completed, will provide the contextual information to revise the interim RCA criteria (see the RCA Delineation and Management Direction sections, later in this chapter).

**Alternative S2 Only.** *While recognizing that EAWS is useful in locating and designing management activities, it is not reasonable or appropriate to assume that all activities are “on hold” until EAWS is completed. In an effort to balance the amount of analytical process requirements with the intent to actively and quickly restore resource conditions, the EAWS “triggers” described in standard B-S5(S2) are designed to generate a more detailed understanding provided by EAWS. These are areas where the greatest risk to threatened, endangered, and proposed aquatic species from management activities exists. EAWS will also be used to reduce risks to those terrestrial species with source habitats that have declined substantially in geographic extent from historical to current periods, as defined in objective T-O1, and to reduce risks in high restoration priority subbasins.*

*Standard B-S5(S2) for Alternative S2 only requires EAWS to be done where there is potential to negatively impact certain species or their habitats, unless those impacts are anticipated to be negligible, short term, and localized in extent. Some assert that this can only be determined after EAWS or site-specific NEPA is conducted. However, the intent is that EAWS will precede NEPA analysis; in fact, it will be the analytical process used to identify the need for the project or activity. The intent is to ensure managers do their best to use EAWS as a tool to help in subsequent planning, design, and implementation of projects. As a general rule, managers have the knowledge and experience to judge the type of activities that are likely to have negligible, short-term, and localized effects. The intent is to make this*

*determination in an interdisciplinary, collaborative setting prior to conducting EAWS.*

*One of Subbasin Review’s primary purposes is to provide a setting for such a determination (see standard B-S1). When conducting Subbasin Review, land managers will be able to identify areas where they believe there is a need to conduct management activities that have the potential to negatively impact threatened, endangered, or proposed aquatic species or their habitats. It is not intended that management activities have zero effect on these species’ habitats, but rather that the degree of impact be viewed in terms of the likelihood of a measurable change in the quantity or quality of the habitat.*

*For example, there may be a situation in Alternative S2 where Subbasin Review identifies that terrestrial source habitats in a T watershed are at risk from wildfire due to changes in understory structure. A prescribed fire in the cool, moist, spring would likely reduce the risk from wildfire, which would probably occur in the hottest, driest part of the year. In turn, fire effects would be less severe in the spring, reducing the chance that it would adversely affect the source habitat in the T watershed. However, although the management activity would be designed to protect a source habitat from wildfire, there is a potential for the source habitat to be negatively affected by the activity. Therefore, EAWS would be required prior to designing the management activity. In this example, the land manager would not need to know the precise prescription before determining whether EAWS was required. This determination would likely be collaborative.*

*In other cases, where the potential to negatively impact listed species or source habitat is less obvious, and where consensus cannot be reached among the collaborating partners, the line officer will make the determination, document the rationale for the determination, and notify the partners of the decision. Where a dispute arises concerning this determination, the dispute resolution process which will be included in the Record of Decision is intended to be used.*

*It is not the intent of this requirement in Alternative S2 to limit on-going actions. On-going activities will be evaluated during the conference/consultation process when new species or populations are listed under the Endangered Species Act.*

**Alternative S3 Only.** *While recognizing that EAWS is useful in locating and designing manage-*

ment activities, it is not reasonable or appropriate to assume that all activities are “on hold” until EAWS is completed. Subbasin Review is the process that would be used to identify the priority and schedule for completing EAWS that are needed in the subbasin. The context provided by Subbasin Review will help decision makers balance short- and long-term risks to resources, such as listed or proposed species, within the subbasin.

New and ongoing activities will be evaluated during the appropriate step-down processes (programmatic planning, Subbasin Review, EAWS, and/or site-specific NEPA analysis) for potential effects on resources; and during the conference/consultation process when new species or populations are listed under the Endangered Species Act.

### **Objectives, Standards, and Guidelines — Ecosystem Analysis at the Watershed Scale (EAWS)**

**B-O2. Objective.** Use watershed-scale information to address resource conditions, risks, and opportunities; to provide context and focus for site-specific NEPA analysis, decision-making, implementation, and monitoring; and to enhance the agencies’ ability to estimate direct, indirect, and cumulative effects.

**Rationale:** EAWS is an issue-driven process that is a valuable tool in understanding the conditions and risks to resources. It is intended to help balance short- and long-term risks through the proper placement and timing of management actions within a watershed. While the intent of this objective is to use watershed-scale information to manage risks associated with threatened, endangered, and proposed species and those species with habitat that has declined substantially in geographic extent from historical to current periods, the expectation is that Ecosystem Analysis at the Watershed Scale will be used to meet the broad-scale objectives in this EIS.

**B-S5(S2). Standard for Alternative S2 Only (no parallel standard for Alternative S3).** Ecosystem Analysis at the Watershed Scale shall be conducted prior to planning and designing resource management activities where there is potential for those activities to negatively impact threatened, endangered, or proposed aquatic species or their habitats, or the source habitats within T watersheds that have declined substantially in geographic extent from the historical to current period. The only exception is where impacts are anticipated to be negligible, short term, and localized in scope.

In subbasins identified as high priority for restoration (see standard B-S4[S2]), the location and timing of watersheds or sub-watersheds requiring EAWS shall be determined through Subbasin Review, and shall be prioritized by level of risk to aquatic and terrestrial species habitat (watersheds with the highest risk would require EAWS first).

**Rationale for Alternative S2:** Resource management activities, as used in this standard, refer to those actions that require the preparation of an environmental assessment (EA) or EIS under the National Environmental Policy Act of 1969, such as timber sales and road construction. The magnitude or intensity of an EAWS is intended to be appropriate to the anticipated issues. It is an issue-focused not activity-focused process, and therefore can be done without being “triggered” by an activity. Potential to negatively impact is defined here to include potential for measurable long-term, direct or indirect management-related change, of an individual or cumulative nature, in the quantity or quality of the habitats referred to above. The intent is to ensure the location and design of activities are improved with the information generated through EAWS; therefore, EAWS are conducted where they add value by improving planning, design, and implementation of projects and activities.

**Rationale for Alternative S3:** Alternative S3 allows more short-term risk from management activities than Alternative S2; therefore there are no “triggers” for EAWS; (that is, EAWS is not required by a certain situation or in a certain location prior to conducting management activities). In the absence of standard B-S5, Subbasin Review will serve to identify priorities and schedules for conducting necessary EAWS. In addition, new and ongoing actions will be evaluated during the appropriate step-down processes for potential effects on resources, and during the conference/consultation process when new species or populations are listed under the Endangered Species Act.

**B-S6. Standard.** The latest versions of the *Ecosystem Analysis at the Watershed Scale, Federal Guide for Watershed Analysis* and the Forest Service/BLM policy implementation guides shall be used when conducting Ecosystem Analysis.

**B-S7(S2). Standard for Alternative S2 Only (no parallel standard for Alternative S3).**

Exemptions from standard B-S5(S2) requirements may be granted following review and approval by the ICBEMP Executive Steering Committee or their designated representatives. Requests for exemption shall be submitted in writing and include detailed rationale.

**Rationale:** Some resource management activities, while having only limited, site-specific impacts, may trigger the requirement to prepare an EA or EIS because of their controversial nature. Decisions concerning these actions would not likely gain substantial benefit from the information provided by Ecosystem Analysis at the Watershed Scale. The intent of this standard is to develop and use a process to screen these types of activities and exempt them from EAWS requirements where determined appropriate.

## Adaptive Management

### Description and Management Intent

Adaptive management is a procedure in which decisions are made as part of an on-going process. It involves planning, implementing, monitoring, evaluating, and incorporating new knowledge into management approaches (see Figure 3-2). This process builds on current knowledge, observation, experimentation, and learning from experience, which are then

used to modify management methods and policies. This definition of adaptive management used in this EIS is not the same definition as is sometimes used within scientific literature.

Adaptive management is useful for two primary purposes:

1. Adjust management because:
  - a. planned direction is adapted to a site-specific situation which is different than what was assumed during planning (for example, high road density for an area was assumed in the EIS but low road density was found on the ground);
  - b. an event (for example flood or wildfire) changes the characteristics of the environment;
  - c. new information accumulates over time through monitoring that indicates planned objectives are not being met (for example, fish habitat declines in A1); and
  - d. new scientific information indicates a need for change (for example, university-sponsored research indicates current management practices are leading to unintended results).
2. Accelerate learning from:
  - a. formal research designed as experiments

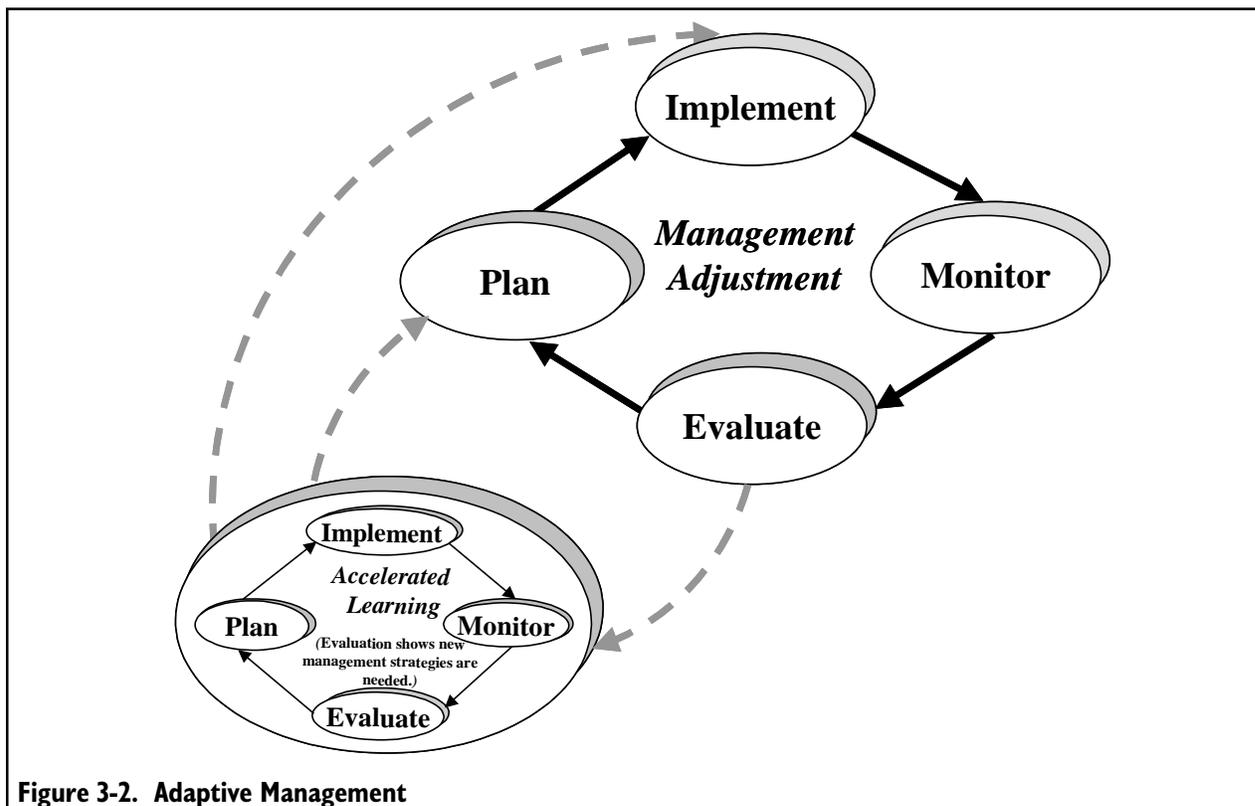


Figure 3-2. Adaptive Management

- to test hypotheses about critical management issues that have high scientific uncertainty and/or are very controversial socio-economically or politically; and
- b. testing the usefulness of new strategies to address management issues through the use of field trials.

The complex interrelationships of physical, biological, and social components of the ecosystem and how they will react to land management practices are often not fully understood when an ecosystem management plan is developed. To be successful, plans must have the flexibility to adapt and respond to new knowledge or conditions.

The need for an adaptive management approach can be illustrated by the following examples:

Until the 1970s, it was commonly thought that logs and other woody debris should be removed from streams to provide for fish passage. Through the accumulation of knowledge it is our current understanding that instream woody debris is important for developing pools and other habitat for fish.

Until the 1980s a commonly held view was that all wildfires should be aggressively suppressed to conserve forests. In recent years we have recognized that universal fire suppression has led to more frequent catastrophic fires and outbreaks of insect and diseases.

In developing the ICBEMP, the Forest Service and BLM used the best science currently available, collaborated with other governmental agencies, and involved the public. However, the agencies' knowledge evolves as society's desires change, as local environmental conditions change, as new management techniques are learned, and as the advances in science and technology are better understood. Therefore, it is inevitable that in the future, some of the management direction in this EIS will be found to be erroneous or inadequate. To address this, implementation of the ICBEMP decision will use an adaptive management approach as a continual process to modify management plans and activities to incorporate new knowledge gained over time.

### Management Adjustment

**B-03. Objective.** Use a continuing process of planning, implementing, monitoring, evaluating, and incorporating new knowledge into management

strategies, for adjustment purposes, where: (1) a planned direction is adapted to a site-specific situation which is different than what was assumed during planning, (2) an event changes the characteristics of the environment, (3) new information accumulates over time through monitoring that indicates planned objectives are not being met; and/or (4) research indicates a need for change.

**Rationale:** This objective is intended to include modifications to A1 and A2 subwatersheds and T watersheds to ensure management direction and designations adapt to new information and/or site-specific conditions.

**B-S8. Standard.** When a land use plan amendment or revision has the potential to change the expected outcomes (described in the management direction for the ICBEMP EIS) for issues that transcend individual administrative units, the administrative unit shall consult and coordinate with the appropriate intergovernmental partners. Adaptive management modifications that require changes in Forest Service Regional Guides or Forest Service or BLM land use plans shall be adopted following applicable planning and regulatory procedures.

**Rationale:** BLM and Forest Service planning regulations require many or all of the same procedural steps to change a plan (amendment) as to develop a new plan (revision). These requirements include involving the public in the planning process, completing a NEPA environmental analysis, approval of proposed changes by the BLM state director and Forest Service regional forester, and an opportunity for the public to protest or appeal the final decision. This standard gives intergovernmental partners an opportunity for involvement in the process and ensures that solutions to issues that are larger than a particular planning area are designed to avoid unintended broad-scale results. The dispute resolution process, which will be a part of the ROD, will provide a mechanism for raising issues that can not be resolved by local intergovernmental partners. *Management direction* includes goals, objectives, standards, and management intent.

### Accelerated Learning

**B-04. Objective.** Pursue opportunities for both formal research experimentation and management-developed field trials for accelerated learning.

**Rationale:** The ICBEMP makes assumptions to fill the gaps in understanding of the complex interrelationships of the physical, biological, and social components of ecosystems. These assumptions are tested over time by developing and testing new manage-

ment strategies and methods, and by conducting experiments to enhance understanding. Administrative units, through the use of field trials, and scientists, through the use of formal research experimentation, can both contribute to extending the knowledge base and testing new ideas. Field trials are not designed as formal research experiments; rather they are operational trials or administrative studies, carried out with less statistical rigor and no up-front intent to publish the results in peer-reviewed publications. These trials, in contrast to formal research experiments, focus more on the outcomes of management activities, rather than on enhanced understanding of cause-and-effect relationships or on ecological processes. While it is most beneficial to know the cause of the outcomes, formal research experiments across numerous, variable site-specific areas are often more expensive than the agencies can afford.

**B-S9. Standard.** Formal research experimentation and management-developed field trials that require deviations from ICBEMP standards shall be submitted to the appropriate intergovernmental partners for consultation and coordination.

**Rationale:** Accelerating learning by experimental deviation from ICBEMP standards can be appropriate for finding new approaches to meet the goals and objectives in this EIS. ICBEMP standards were developed using the best available information regarding appropriate conditions and practices required to achieve objectives and were approved after extensive consultation and coordination with intergovernmental partners. Any variations on the standards—whether for scientifically validated research or for management projects or administrative studies—should be reviewed by all partners before approval.

**B-S10. Standard.** Techniques (treatments or management actions) that have limited testing by research experimentation or limited field application, whether used in management-developed field trials or formal research experimentation, should be used in aquatic A1 and A2 subwatersheds and terrestrial T watersheds only if their potential to aid achievement of the objectives outweighs their potential to prevent achievement.

**Rationale:** A1 and A2 subwatersheds and T watersheds have a management intent that is focused on minimizing risks to aquatic and riparian systems (A1 and A2 subwatersheds) and terrestrial source habitats (T watersheds), for example, from sediment delivery and noxious weed invasions. Objectives in A1, A2, and T areas are designed to minimize these risks. In these areas, it is possible that the risk involved in applying techniques (that is, treatments or manage-

ment actions) that have limited credibility might exceed acceptable risks. Thus, for techniques with limited credibility, caution is warranted before proceeding with application.

**B-G1. Guideline.** When selecting areas to conduct adaptive management accelerated learning trials, weigh the potential value of information gained from evaluating management prescriptions against potential risk to the resource value(s). Select sites to test hypotheses by considering areas where risks from management can be minimized and where the value of information gained is commensurate with the potential effects.

**B-G2. Guideline.** Consider testing alternative approaches to standards and best management practices that are designed to meet ICBEMP goals and objectives in new ways. If such alternative approaches are used, standard B-S9 would need to be followed.

**B-G3. Guideline.** Consider including agency or other researchers in study design, sampling methods, data collection, management and analysis, and evaluation of management applications for activities aimed at enriching knowledge of management techniques or ecological knowledge.

## Monitoring and Evaluation

### Description and Management Intent

Monitoring and evaluation are an integral part of adaptive management and are key to achieving the short- and long-term goals and objectives of the Interior Columbia Basin Ecosystem Management Project. The wide diversity and variability of biophysical resources and socio-economic conditions within the project area require that ICBEMP direction be outcome-based rather than prescriptive. Success in meeting ICBEMP goals and objectives requires that the effects of this outcome-based direction be monitored and evaluated in a timely manner to determine if modifications are needed.

The intent is for the monitoring and evaluation strategy to be developed through a collaborative, intergovernmental, interagency, and interdisciplinary process; based on scientific understanding of interactions among ecosystem components and human activities; affordable; and technically feasible. It needs to be designed to accommodate many geographic levels by addressing linkages and relationships among scales in the project area (such as basin, subbasin, and watershed) by providing for both broad-scale and locally gathered information to be compiled and interpreted. This hierarchical pattern of

answering questions and measuring trends at various levels will assist in answering broad-, mid-, and fine-scale questions.

Each of the four types of monitoring will focus on different facets of this EIS. For example, implementation monitoring will determine if planned activities are being implemented and if standards and objectives are being followed. Effectiveness monitoring will determine if decisions in the ROD are effective and appropriate to achieve the desired results, using the management intent, goals and objectives, and management direction. For more information, see Appendix 10.

The intent is to present the implementation monitoring portion of the monitoring plan with the ROD and complete the remainder of the monitoring plan within two years after the ROD is signed.

**B-O5. Objective.** Monitor the broad-scale health and integrity of ecosystems in the project area, to determine ecological and economic status and trends, provide linkage to finer scales, and provide the basis for changes in management direction through adaptive management.

**Rationale:** Monitoring plays a pivotal role in the adaptive management process, primarily to detect undesirable changes early enough that management activities can be modified to work toward achieving the desired goals and objectives of the ICBEMP ROD. Information developed through monitoring will be used to evaluate management strategies, alter decisions, change implementation, or maintain current management.

**B-S11. Standard.** Forest Service and BLM administrative units shall contribute resources to collect, store, and interpret information needed to implement a broad-scale monitoring plan, which will be jointly developed by Forest Service regional offices and BLM state offices through collaboration with intergovernmental partners.

**Rationale:** *Intergovernmental partners* include other federal agencies, state and local governments, tribal governments, resource advisory committees, and provincial advisory councils.

**B-O6. Objective.** Evaluate broad-scale monitoring data every five years to determine if the ICBEMP ROD is being implemented and if management practices are leading to achievement of the broad-scale goals and objectives.

**Rationale:** It is critical to conduct evaluations to determine whether ICBEMP standards are being

implemented as intended and if they are meeting goals and objectives. Broad-scale ecosystem changes occur slowly over time. Management evaluations made too frequently may not detect changes in the ecosystem because cost-effective monitoring systems are not sensitive enough to detect them. However, if ecosystem management evaluations are not conducted, or are delayed for too long, irreversible changes may take place without detection. Local evaluations are useful for determining if local management strategies are contributing to meeting broad-scale management objectives, while broad-scale evaluations are useful for determining if, on the whole, broad-scale management objectives are being met.

## Management Direction — Base Level

### *Description and Management*

#### **Intent: Overall**

Forest Service- and BLM-administered lands throughout the project area would be covered by management direction in existing land use plans, recovery plans, and other current direction related to threatened or endangered species, augmented or amended by specific base level direction (standards and objectives) in the ICBEMP Record of Decision.

Complying with objectives and standards in the base level direction generally means that the Forest Service and BLM must implement actions to maintain or promote desirable resource conditions. The specific location, timing, and intensity of these management actions would depend on acceptable levels of risk determined at the local level. Determining acceptable levels of risk entails considering both the risks from management actions and the risks from not conducting any activities, in the short term and long term. It also involves considering fine-scale risks in the context of larger scale processes and conditions.

Some of the direction specifically indicates that it applies in either the short term (up to 10 years) or in the long term (more than 10 years), or that it specifically addresses short-term risk or long-term risk. Although the emphasis may be on the short or long term, it is recognized that the situation is never that black and white. While it is important to understand the emphasis, the intent is to consider both types of risks in local-level decisions. In many cases short-term impacts could result from implementing management actions (such as road decommissioning) to

attain objectives. The intent is to analyze and weigh the risks and benefits to the various resources in the local decision-making process.

**Alternative S2 Only.** *In Alternative S2, there is a greater emphasis on minimizing short-term risk from management activities, especially risk to threatened, endangered, or proposed species habitats and to riparian areas.*

**Alternative S3 Only.** *In Alternative S3, there is a greater emphasis on minimizing long-term risk either from management activities or from disturbance events. This would occur through accepting more risk from management activities in the short term, within the requirements of the Endangered Species Act, Clean Water Act, and Clean Air Act.*

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***Where ecosystems are in good condition, base level management direction requires that they remain in good condition. Where ecosystem conditions are not as good, the intent of base level direction is to keep the conditions from deteriorating further until they can be actively or passively restored.***

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Base level direction is intended to be accomplished in an integrated fashion, because landscape dynamics, terrestrial habitats, aquatic habitats, and human components are inseparable. Rangeland, forestland, aquatic areas, riparian areas, and their associated species are intertwined, through spatial overlap, foodwebs, and the flows and cycles of energy, nutrients, and water, all functioning within the context of the desires and needs of society. Base level direction addresses both short-term and long-term integrated needs by maintaining resource conditions. Where ecosystems are in good condition, management direction requires that they remain in good condition. Where the condition of ecosystems is not as good, the intent of base level direction is to keep the conditions from deteriorating further until they can be restored either passively or actively. The restoration-focused management direction is in a separate section, which follows the base level direction section.

**Alternative S2 Only.** *In Alternative S2, there is a greater emphasis on locating management activities in areas where short-term risk would be minimized.*

**Alternative S3 Only.** *In Alternative S3, there is a greater emphasis on locating management activities and producing commodity products near isolated and economically specialized communities, including*

*tribal communities. These areas are shown on Map 3-6 and Map 3-7, later in this chapter.*

Management direction for threatened, endangered, and proposed species would apply to habitats used by those species. Generally, the intent for management of these areas is to protect the threatened, endangered, or proposed species habitats and to contribute to species recovery. See the Aquatic and Terrestrial Threatened, Endangered, or Proposed Species section for additional description of management intent.

Management direction for Riparian Conservation Areas (RCAs) is included under base level direction because it applies to RCAs throughout the project area. RCA direction will replace direction for riparian areas in existing land use plans (including PACFISH and INFISH) and can not be superseded by less restrictive direction. See the Aquatic/Riparian/Hydrologic Component and RCA sections for additional description of management intent for RCAs.

Management for terrestrial source habitats is conditional base level direction and would apply where these habitats exist. (See Appendix 5 for cover types that are terrestrial source habitats.) Unless otherwise specified, reference to terrestrial source habitats in this section is intended to encompass habitat for all 12 Terrestrial Families described in the *Terrestrial Source Habitat Analysis* (Wisdom et al. in press).

## **Landscape Dynamics Component**

### **Description and Management Intent**

Direction in this section focuses on landscape-level processes and functions. Landscapes are healthy when their components and processes are functioning properly, in the context of the desires and needs of society. Landscape considerations include succession/disturbance regimes (such as fire, flood, windthrow, insects, and disease) and processes (such as the flows and cycles of energy, nutrients, and water), and their dynamics. Succession/disturbance regimes that are in concert with the climate, landform, and biological and physical characteristics of the ecosystem provide for terrestrial and aquatic habitats, intact hydrologic processes, continuous and predictable flow of products, and continuous land uses. Direction for the landscape dynamics component provides the foundation for specific additional direction for aquatics, terrestrial wildlife and plants, and social-economic needs (including tribal rights and interests), and provides the thread that connects and integrates the individual components.

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***Landscape dynamics direction provides the foundation for additional aquatics, terrestrial wildlife and plants, and social-economic needs (including tribal rights and interests) direction, and provides the thread that connects and integrates the individual components.***

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### **Ecosystem Processes and Functions**

**B-O7. Objective.** Preserve future management options and prevent further declines in landscape processes and functions by maintaining and promoting (a) healthy, productive, and diverse plant and animal communities as appropriate to soil type, climate, and landform (terrestrial source habitats); and (b) ecological processes of nutrient cycling, energy flow, and the hydrologic cycle.

**Rationale:** This objective provides the foundation for base level direction that not only emphasizes native plant communities and animals, and their source habitats, but also the requirements of maintaining ecosystem processes, functions, and characteristics. The emphasis is on native animals and plants; however, at times non-native animals and plants are acceptable. For example, it is often necessary to use non-native species where native plant communities cannot be maintained or restored with current technology and knowledge, such as in low precipitation cheatgrass areas and for crested wheatgrass seedings.

Management direction for landscape restoration is primarily found in the objectives and standards of the Restoration section of this chapter. However, in the short and long term some restoration activity is to be expected in base level areas (that is, outside identified as high restoration priority subbasins, and outside A1, A2, or T areas). Through finer scale or locally important restoration emphases, parts of the landscape can be made resilient to disturbance in the short term, so they can act as buffers or fuel breaks for higher hazard areas or important areas on the landscape. In this way, managers can prevent further declines in landscape processes and functions to preserve long-term management options.

**B-O8. Objective.** Management actions should sustain hydrologic processes characteristic of the geoclimatic settings. Hydrologic processes critical for balanced landscapes/ecosystems include, but are not limited to, stream flows and sediment in channels.

**Rationale:** Broad-scale geoclimatic settings influenced by time and disturbances produce landforms, soils, and vegetation with inherent variability in

performance elements such as stream channel form, large wood, stream flow and sediment regimes. *Stream flow regimes* include timing, magnitude, duration, and spatial distribution of peak, high, and low flows. *Sediment regimes* include timing, volume, rate, and character of sediment input, storage, and transport. Characteristic stream flows (including floodplain inundation and water table elevation) and sediment regimes are essential to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.

**B-O9. Objective.** Manage vegetation structure, stand density, species composition, patch size, pattern, and fuel loading and distribution to reduce the prevalence of uncharacteristically large and severe disturbances; and so the landscape succession/disturbance regimes and terrestrial source habitats are resilient to natural disturbances such as wildfire, insects, disease. Priority should be given to whole hydrologic units if resources are available and if the landbase allows for it.

**Rationale:** Maintenance of vegetation characteristics and the biological crust component (particularly in the dry rangeland plant communities) that contribute to the resiliency of plant communities to disturbance is fundamental to a healthy ecosystem. *Vegetation structure* is the height, size, and age of vegetation. *Composition* is the percent of each species occurring on a site. Vegetation treatments may include prescribed fire and planning for appropriate wildfire suppression response. See also the rationale for B-O7.

**B-G4. Guideline.** Consider fragmenting large patches of shade-tolerant species that are outside the desired condition. Break up their continuity and decrease horizontal landscape homogeneity, consistent with landform, climate, and biological and physical characteristics of the ecosystem and natural disturbance regimes.

**B-G5. Guideline.** Consider matching vegetation patch sizes to local predicted disturbance regimes.

**B-G6. Guideline.** Consider using fire as a management tool within and across landscapes. Through prescribed fire plans use management actions that will reintroduce fire as a natural disturbance process and help achieve desired conditions, such as maintenance and/or restoration of source habitat(s) for terrestrial vertebrates.

**Rationale:** Fire is an important component of the succession/disturbance regime of the project area. Whenever possible, it should be used to repattern vegetation on the landscape to patches more consistent with the landform, climate, and biological and

physical components of the ecosystem. There are places within the project area, however, where vegetation and fire regimes have changed so much since historical times, that fire without some type of preparatory activities would not move the ecosystem toward desired conditions, or may be detrimental to the ecosystem.

**B-G7. Guideline.** Consider “wildland fire use for resource benefit” as a means of managing extensive areas of insect- and/or disease-infested forests that have already lost their salvage value or are otherwise uneconomical to treat.

**B-G8. Guideline.** To the extent that fuel amounts, arrangements, and management objectives allow, conduct management-ignited prescribed fire activities at frequencies and intensities similar to the natural fire regime appropriate to the site.

**B-G9. Guideline.** Use available tools, such as fire behavior, fuel loading, duff composition, and tree mortality models, to determine where desired stand conditions can be attained with prescribed fire treatments or where stand conditions or other hazards require mechanical thinning prior to prescribed fire treatment. Where necessary, use thinning and/or mechanical fuel reduction in combination with prescribed fire.

**B-G10. Guideline.** Consider both managed fire and “wildland fire use for resource benefit” as management tools. “Wildland fire use for resource benefit” can be a more important tool after stands have been restored to a fire-resistant condition or are desired to be in a severe fire regime.

**B-O10. Objective.** Land uses such as livestock grazing (including the season, timing, frequency, duration, and intensity of livestock grazing pressure), and where applicable, timber harvest and recreation, should provide:

- a. Adequate cover (live plants, plant litter, residue, and/or biological crusts) to promote infiltration, soil water storage, and maintain soil stability in upland areas;
- b. Adequate cover and plant community structure in riparian-wetland areas to promote the attainment of proper functioning condition (BLM Technical Reports 1737-9 [USDI/BLM 1993] and 1737-11 [USDI/BLM 1994b]);
- c. (1) Soil surface conditions that support infiltration; (2) soil subsurface conditions that ensure movement of soil water into the soil profile; and (3) the combination of soil surface and soil subsurface conditions in (1) and (2) which will

ensure soil water storage;

- d. As minimal an increase and spread of noxious weeds as possible, over and above the inherent increase and spread of noxious weeds by natural disturbances (such as wildfire);
- e. Soil and vegetation conditions that provide opportunity for establishment of desirable (that is, native and desired non-native) plants; and maintenance of plant vigor for seed production, seed dispersal, and seedling survival of desired species;
- f. Maintenance and restoration of water quality;
- g. Maintenance and the opportunity for restoration of terrestrial source habitat (that is, cover type-structural stage combinations) patch size and density that are in synchronization with the succession and disturbance regimes governed by climate, landform, and soils; and
- h. For reduction of the potential conflicts between domestic sheep and bighorn sheep.

**Rationale:** This objective is taken from Healthy Rangelands Guidelines, which the BLM currently is implementing. It is a comprehensive base level objective, which is consistent with both the aquatic and terrestrial habitat portions of the ecosystem management strategy. The Healthy Rangelands guidelines that were used as the basis for this objective focused on livestock grazing management. However, most if not all land uses should provide for these functions and processes, if feasible. It is understood that in some cases (for example, copper mining or an off-road vehicle park) it would be impossible to provide for all these functions and processes while permitting the use. Therefore, tradeoffs must be expected for some land uses.

Bullet “a” is intended to interpret vascular plant material (live and dead) and biological crusts (that is, microbiotic crusts) together, as contributing to cover. Both vascular plant material and biological crusts contribute to infiltration, soil water storage, and soil stability, to various degrees on various soil types and soil textures. In addition, the degree of biological crust development and vascular plant production varies by soil type, soil texture, precipitation, and other factors.

Bullet “b” is intended to foster land uses that are compatible with riparian-wetland area improvement and that will provide for proper functioning condition (PFC) of both lotic (running water habitat such as rivers, streams, and springs) and lentic (standing water habitat such as lakes, ponds, seeps, bogs, and meadows) riparian areas. The intent is for PFC to be the *minimum* threshold for management of riparian-

wetland areas, with the expectation of vegetation community succession *beyond* PFC to some desired plant community.

Bullet “c” is intended to foster land uses that avoid subsurface soil compaction slowing the movement of water in the soil profile.

Bullet “d” is intended to manage land uses so as to minimize the rate of noxious weed spread, given that the spread of noxious weed seed cannot be totally prevented where land uses and noxious weeds occur together. Subsequent weed control actions would help prevent the increase and spread of noxious weeds. Thus although land uses might contribute to noxious weed increase and spread, the intent of this objective is to modify, not prohibit, land uses so noxious weed spread is minimized, and to recognize that land uses might need to be combined with weed control.

Bullet “e” is intended for land uses to not diminish the ability of plants to produce seed or vegetation sprouts (below that which is occurring because of recent climatic conditions). For soil conditions, the intent of this objective is (1) achievement of bullet “c”, because soil surface conditions that support infiltration will provide opportunity for establishment of desirable plants; and (2) maintenance of biological crusts (see bullet “a”), because recent science findings are beginning to provide evidence that in some situations intact biological crusts can have a positive role in plant establishment.

Bullet “g” is not intended to assert that land uses should be used as a restoration tool to achieve certain terrestrial source habitats (that is, certain cover type-structural stage combinations). Rather, the objective is intended to permit land uses that do not prevent appropriate cover type-structural stage combinations from persisting in expected patch sizes and densities across and within landscapes. For example, livestock grazing management strategies could be promoted if they would not shift fire frequency, fire severity, and successional patterns to the point where grassland-shrubland cover types and structural stages would be affected by encroachment of woody species and increased density of woody species, or where ponderosa pine and mixed-conifer forest structural stages would be affected by increasing density of trees.

Bullet “h” is intended to reduce conflicts between domestic sheep and bighorn sheep. Such conflicts can have negative consequences for both wildlife and livestock. Numerous research studies and monitoring of bighorn sheep “die-offs” have indicated a high correlation between die-offs and contact between domestic sheep and bighorn sheep.

**B-S12. Standard.** If livestock grazing management is a factor in causing an area to function “at risk”, then that area shall be high priority to initiate changes to livestock grazing management.

**Rationale:** There is agreement among rangeland scientists that areas ‘at risk’ of crossing a threshold, and thus progressing to a lower (more degraded) successional state, should be prevented from crossing the threshold. Modifying livestock grazing management in these areas can prevent these areas from crossing a threshold to a more degraded state, thereby achieving improvement in rangeland condition and source habitats used by terrestrial rangeland vertebrates, such as sage grouse. Areas can be identified through processes such as landscape analyses, allotment management planning, or rangeland health rapid assessment process (USDI/BLM 1999).

**B-G11. Guideline.** One means of reducing conflict between domestic and bighorn sheep is to phase out (close) individual livestock allotments as they become vacant within occupied habitat. Habitat is considered occupied if bighorn sheep are currently present, or if they would be expected to disperse into the area in the next 10 years.

**B-G12. Guideline.** On rangelands, consider locating water development, fencing, salt, and supplements on upland areas to keep domestic livestock from congregating in riparian areas.

**B-G13. Guideline.** Consider developing livestock waters, seedings, and other projects that concentrate livestock use in areas (1) that do not conflict with wintering wildlife, and (2) that will not be opening up new ground for livestock grazing that has not been used by livestock in the past.

**B-G14. Guideline.** Prior to making adjustments to livestock use as a result of conflicts with big game species, consider determining whether:

- ◆ There is dietary overlap.
- ◆ The area is in good or degraded range condition.
- ◆ The use is seasonally different.
- ◆ The livestock use is conditioning the forage for big game.
- ◆ The big game population is decreasing.
- ◆ The area is winter range.
- ◆ The area provides important fawning, calving, or lambing areas.

**B-G15. Guideline.** On dry shrublands, consider the following to maintain soil, biological crust, and vegetation health and productivity during drought periods:

- ♦ Spring/fall or winter grazing instead of spring/summer/fall.
- ♦ Shorter duration/lower intensity grazing .
- ♦ Avoidance of grazing during the growing season (when perennial grasses are actively growing, and during the more critical boot-to-seed-ripe stage).
- ♦ Fewer head of livestock along with fewer days.
- ♦ Encourage greater flexibility in ranching operations to respond to changing range conditions.
- ♦ Incorporate more years of deferment or rest into grazing systems (for example, one year on and two years off, or two years on and two years off) to improve the rangeland's ability to handle dry conditions. (Traditional three-pasture systems that provide only one year of rest and two years of critical growing season grazing are not sufficient in some dry shrublands to maintain desirable resource conditions during drought conditions.)

**B-G16. Guideline.** During planning or other appropriate processes, consider leaving pastures or allotments vacant or open for use by livestock permittees or lessees who are affected by AUM reductions in their normal areas of use due to wildfire or measures to protect riparian areas or threatened, endangered, or proposed species.

**B-G17. Guideline.** The following techniques may be used to help control or rehabilitate cheatgrass-dominated ranges:

1. Intensive early spring grazing in cases where soils, remnant native perennial plants, and biological crusts will not be adversely affected;
2. Herbicides, especially in combination with burning or plowing.

## Noxious Weeds

**B-O11. Objective.** Maintain noxious-weed-free plant communities (cover types) or restore plant communities with noxious weed infestations through use of broad-scale integrated weed management (IWM) strategy(ies).

**Rationale:** The rapid expansion of noxious weeds in the project area is one of the greatest threats to healthy native plant communities. Noxious weeds are reducing the value of these plant communities in several ways, including:

1. decline in quality of aquatic-riparian and terrestrial habitats for wildlife;
2. reduction of forage for grazing animals;
3. potential increase in soil erosion;
4. potential decline in water quality;
5. reduction in biological diversity;
6. negative impacts on or declines in native plant resources associated with the interests or reserved rights of American Indian tribes (see Native Plants section of Appendix 8 for a partial list of plants); and
7. increase in the economic burden of maintaining the quality of recreation and wilderness areas. Uncoordinated efforts throughout the project area have been ineffective against noxious weeds. Noxious weed strategy(ies) need to be consistently implemented project-area wide to reduce the negative impacts of noxious weeds. This objective hinges on a project-area-wide integrated weed management strategy being developed by Forest Service regional and BLM state office staffs, in collaboration with other federal, tribal, and state officials.

**B-S13. Standard.** Broad-scale integrated weed management (IWM) strategies shall incorporate these goals:

- a. Education and awareness
- b. Prevention of weed spread
- c. Detection, inventory, and mapping
- d. Planning
- e. Integrated methods of weed control
- f. Collaboration and coordination with federal, state, and local agencies; tribal governments; and others, as appropriate
- g. Monitoring, evaluation, research, and technology transfer. (See Appendix 11.)

**Rationale:** Uncoordinated weed control efforts throughout the project area have been ineffective against noxious weeds. Negative impacts attributable to noxious weeds can be reduced more rapidly if noxious weed strategy(ies) are consistently implemented project-area wide. This standard lists seven goals that form a *consistent* framework for IWM strategy(ies) to be implemented by the BLM and

Forest Service. This standard amends existing BLM and Forest Service IWM strategies to incorporate the seven goals if they are not currently an emphasis of the strategies.

**B-S14. Standard.** A1 and A2 subwatersheds, and terrestrial source habitats in T watersheds (see objective T-O1) have the highest broad-scale priority for implementing IWM strategy(ies). Management shall be focused on preventing noxious weed spread into and within A1, A2, and T, and eradication of existing infestations if possible. Existing and future noxious weed inventory information obtained within A1, A2, and source habitat within T shall be used, along with the *Susceptibility of Vegetative Cover Types to Invasion by Noxious Weeds* (see Tables 2-35 and 2-36, in Chapter 2), to first address cover types rated as High, then address cover types rated Moderate, and finally address cover types rated Low. In particular, goals “b” (prevention of weed spread), “c” (detection, inventory, and mapping), and “e” (integrated methods of weed control) from Standard B-S13 shall be incorporated.

The remaining base level areas have a lower broad-scale priority for maintaining noxious-weed-free plant communities (cover types) or restoring plant communities with noxious weed infestations.

*Rationale:* This standard focuses on using a science-based, noxious weed susceptibility index (*Susceptibility of Vegetation Cover Types to Invasion by Noxious Weeds*) to prioritize at a broad scale where prevention of weed spread; detection, inventory, and mapping; and integrated methods of weed control are implemented within vegetation cover types in the A1, A2, T, and base level areas. However, broad-scale prioritization does not preclude noxious weed control efforts in other areas. For example, ongoing or future agreements with state, county, tribal, or local entities may shift some weed control funding to areas with local noxious weed concern that may have a higher priority than those identified at the broad scale.

**B-G18. Guideline.** Where possible, consider prioritizing weed management as follows:

- ◆ Prevent invasion of new invaders by limiting weed seed dispersal, minimizing soil disturbance, and properly managing desirable vegetation.
- ◆ Detect and eradicate new invaders.
- ◆ Target roadways, water courses, campgrounds, along trails and railways, and other high disturbance areas for a constant prevention and containment program.
- ◆ Emphasize control of large-scale infestations

(limiting the spread of noxious weeds and reducing the infestation level).

- ◆ Focus initial efforts on small, manageable units with an understory of residual plants, and then focus on the remaining infestation. Start with the outside and work toward the center of the infestation.
- ◆ Consider using native, locally adapted species for rehabilitating weed-infested lands and bare ground.

**B-G19. Guideline.** While attempting to prevent the spread of noxious weeds into areas that are susceptible to invasion, consider rangeland vegetation cover types that are of high or moderate susceptibility to invasion. See Appendix 11 for a table that portrays the rangeland cover types in the project area and their susceptibility to invasion by noxious weeds.

**B-G20. Guideline.** Consider developing cooperative weed prevention programs with suppliers of sand, gravel, top soil, seed, hay, straw, ornamental plants, and any other materials that may transport seed and other reproductive plant parts of noxious weeds.

**B-G21. Guideline.** Consider developing control strategies targeted and tailored to specific noxious weeds. Consider combining cultural, physical, biological, and chemical methods into a control strategy.

**B-G22. Guideline.** Because weeds are not adapted well to shade, consider retaining shade along roads by minimizing removal of trees and other roadside vegetation during construction, reconstruction, and maintenance, particularly on south aspects.

**B-G23. Guideline.** To minimize transport of weed seed by pack and saddle stock:

- a. Consider requiring pack and saddle stock to use only certified weed-free feed and straw bedding in designated areas. Where applicable in wilderness areas, this technique should be deferred to the Limits of Acceptable Change planning process. Encourage the use of weed-free feed in all areas. (Visitors to National Forest System lands are now required to use certified noxious-weed-free hay, straw, or mulch in Idaho and Montana);
- b. Consider requiring pack and saddle stock to be quarantined and fed only weed-free feed for 24 hours before traveling off roads. Before quarantine, tail and mane should be brushed out to remove any weed seed.

**B-G24. Guideline.** To minimize transport of weed seed to relatively weed-free areas that are at moderate to high susceptibility of invasion, consider controlling the timing of livestock movement from infested to non-infested areas, especially in range allotments that have both weed-infested and relatively weed-free areas that are at moderate to high susceptibility of invasion. Consider permitting livestock to graze weed-infested areas only when weeds are not flowering or producing seeds, or, if livestock are grazing weed-infested areas, consider moving them to a holding area for about 14 days before moving them to weed-free areas.

**B-G25. Guideline.** To ensure that fire suppression and rehabilitation efforts minimize weed spread, consider reseeding all disturbed soil in relatively weed-free areas that are at moderate to high susceptibility of invasion.

**B-G26. Guideline.** Consider using grazing management practices where feasible for wildfire control and to reduce the spread of targeted undesirable plants (such as cheatgrass, medusahead, and noxious weeds) while enhancing vigor and abundance of desirable native or seeded species.

**B-O12. Objective.** Initiate collaboration with affected federally recognized tribes on noxious weed control programs.

**Rationale:** Tribes affected by management actions in the project area share BLM and Forest Service concerns with the increasing trends and adverse impacts of noxious weed invasions. Tribes are generally supportive of noxious weed control actions and have increasing numbers of trained personnel in their own programs. Some tribes may be interested in assisting BLM and Forest Service noxious weed control actions, especially where a mutual benefit might be realized.

**B-S15. Standard.** Planning and implementation of noxious weed control actions should consider effects on plant resources that are culturally significant to tribes (for example, timing of weed treatment and associated health considerations regarding harvest of affected plant species).

**Rationale:** Collaboration with tribes, county agencies, and federal agencies will help to ensure plant resources and effects on these resources of tribal interest are considered and integrated into planning and implementation of noxious weed control actions. Furthermore, because these plants tend to be seasonal in nature, there are tribal health concerns regarding ingesting or gathering plants in areas where efforts are underway to control noxious weeds; collaboration with affected tribes could result in design of actions

so that timing or type of treatment mitigate these concerns.

## Unstable and Potentially Unstable Lands

**B-O13. Objective.** On unstable or potentially unstable lands (outside RCAs), design management activities to not increase the natural frequency and distribution of landslides.

**Rationale:** Mass soil movement is part of a mountainous watershed's natural disturbance regime. Mass soil movement types and frequency of events are variable throughout the project area. Inputs of material from mass soil movements, such as coarse sediments and wood, can be beneficial to aquatic and riparian habitats. The management intent is to prevent above-natural rates in the frequency and distribution of landslides due to management activities by maintaining important hydrologic processes on unstable and potentially unstable lands. Important hydrologic processes include, but are not limited to, interception or concentration of surface or subsurface flow, infiltration rates, retention of wood, and evapotranspiration rates.

**B-S16. Standard.** Until a land use plan is revised, unstable and potentially unstable lands shall be identified as part of any proposed project planning prior to conducting management activities. In order for management activities to not increase the frequency and distribution of landslides, management actions on unstable and potentially unstable lands outside RCAs should retain dominant hydrologic functions and processes that influence landslides.

**Rationale:** Proposed management activities (for example, road construction and vegetation removal) can disrupt hydrologic processes and accelerate the natural frequency and distribution of mass soil movements, thereby resulting in negative impacts on aquatic habitats. Identification of unstable and potentially unstable lands is necessary to properly develop and design proposed management activities on these lands. The intent is to use existing information/data, not to initiate a field inventory effort.

**B-S17. Standard.** During land use plan revision, the dominant mass soil movement types within the administrative unit's planning area shall be identified and their effects on allowable sale quantity calculation addressed. Use analytical methods that identify unstable and potentially unstable lands with regard to dominant mass soil movement types and the probability of failure. Management direction shall be stratified according to probability of failure to retain hydrologic functions and processes (for example, interception or concentration of surface or subsurface

flow, infiltration rates, evapo-transpiration rates) so that frequency and distribution of landslides are not increased due to management actions and so that management actions contribute to attaining aquatic and riparian objectives. During site-specific NEPA analysis and planning, land use plan-level unstable and potentially unstable lands map shall be refined and ground-truthed.

**Rationale:** The intent of this standard is to not increase the frequency and distribution of landslides. It is intended to direct how land use plan revision will address unstable and potentially unstable lands. It is not intended to take specific acres of unstable lands out of the timber base, but to facilitate adjustments to the allowable sale quantity to take into account their effect on management options.

### Fire Management and Air Quality

**B-O14. Objective.** Protect, maintain, and/or improve air quality on Forest Service- and BLM-administered lands in the project area. Evaluate the long-term improvements in summer air quality compared with the short-term deteriorations to spring and fall air quality that come with prescribed burning. Manage these short- and long-term risks to air quality.

**Rationale:** The biggest danger to broad-scale air quality in the project area comes from smoke generated by wildfire. In much of the interior Columbia Basin, biomass production greatly exceeds decomposition rates. Years of wildfire suppression have led to huge accumulations of biomass. This biomass can be mechanically removed from the site to prevent undue smoke from wildfires; however, it is generally costly and removes needed nutrients from the site.

Land managers have little control over where, when, and how much smoke is put into the air during wildfires. Through prescribed fire, smoke levels can be better managed. For example, air quality can be somewhat diminished in the short term so that the likelihood of violating air quality standards in the long term are diminished.

**B-O15. Objective.** Use prescribed fire to reverse the declining trend in air quality.

**Rationale:** Through prescribed burning, overall air quality can be improved by: (1) moving some of the smoke to spring and fall when fuel and air conditions are cooler and more moist; (2) reducing the size of wildfires; (3) reducing the severity of wildfires; and (4) managing cumulative effects from prescribed fire smoke.

**B-S18. Standard.** Prior to any prescribed burning, the risks and benefits to air quality of using prescribed fire shall be compared to risks and benefits of alternative methods of modifying vegetation, habitat, and fuels. If the vegetation to be treated with prescribed fire can be modified through an alternative method that on balance (considering cost, risks, and benefits) will achieve equivalent or better fuel load reduction and also provide other benefits not achievable with prescribed fire, the alternative method shall be used.

**B-S19. Standard.** Prior to any prescribed burning, the existing air quality monitoring network shall be identified and described. If needed, a plan to revise or expand monitoring shall be developed to ensure that impacts of prescribed burning on air quality in local communities are measured. Install and use the monitoring network, as revised, to document the magnitude and extent of air quality impacts from prescribed burning. Use available data to determine whether additional mitigation measures are necessary, to help determine the source(s) of the emissions (whether from prescribed fires, wildfires, or “wildland fire use for resource benefit”), and provide information for future cumulative impact assessments, including new regulations on particulate matter regional haze.

**B-O16. Objective.** Decisions on management of wildfires and effects on air quality from prescribed burning should be considered in the context of impacts from other sources of particulate matter in the project area, within and across administrative jurisdictional boundaries. Administrative units (national forests and BLM districts) should work with federal, state, tribal, and local air quality management agencies to develop a basin-wide smoke management plan.

**Rationale:** The intent is to preclude impacts from multiple sources that could collectively produce severe visibility problems and/or particulate levels that present health risks. This would include impacts from non-federal sources such as forest, rangeland, and agricultural burning.

Management of particulate emissions is complicated and crosses many jurisdictional boundaries. Although it may be difficult to develop, a basin-wide plan would provide a better means of air quality management and coordination than current plans do. Restoring fire to the ecosystem is a key part of sustainability of many parts of the project area. The Forest Service and BLM have considerable knowledge of wildland fires; therefore, administrative units should be active players in facilitating and developing a basin-wide plan.

**B-S20. Standard.** Prior to any prescribed burning activity or decision to use wildfire to achieve management objectives, appropriate local, tribal, state, and adjacent state air quality management organizations shall be consulted. If such consultation results in a determination that other burn activities are underway or planned in areas or at times that would likely intensify negative air quality impacts from the planned burn, additional mitigation measures shall be explored in collaboration with the other organizations to minimize such multiple impacts to the extent practicable.

**B-O17. Objective.** Initiate collaboration with public and private landowners to increase safety in the urban-rural-wildland interface. Work together to reduce risk from natural disturbance by: reducing live and dead fuel loading, ladder fuels, and ignition sources; thinning forests to reduce tree density; creating single story structures; favoring shade-intolerant species; maintaining low risk of crown fires; and using prescribed fire to maintain low fuel levels.

**Rationale:** Protecting property and life is a high priority in urban-rural-wildland interface areas. Although floods, wind, and other disturbances must be considered, reducing risk of wildfires generally is the most important consideration. In areas that often contain mixed ownerships, safety can be improved with proper cooperation and action.

**B-O18. Objective.** Incorporate wildland fire into existing planning processes and assessments, recognizing its essential role as an ecological process. Clearly defined fire management goals, objectives, and actions should be developed and updated in comprehensive fire management plans. Wildfire management strategies and suppression activities should minimize damage to long-term ecosystem function, and should emphasize protection, restoration, or maintenance of key habitats.

**Rationale:** Strategic watershed-scale fuel management and fire use planning, often integrating a variety of treatment methods, will cost-effectively reduce fuel hazards to acceptable levels and achieve both ecosystem health and resource benefits. Fire management programs and activities should be based upon protecting resources, minimizing costs, and achieving land management objectives. They must also be economically viable.

Sound risk management is a foundation for all fire management activities. Risks and uncertainties relating to fire management activities must be understood, analyzed, communicated, and managed as they

relate to the cost/consequences of either doing or not doing an activity.

**B-S21. Standard:** Ecosystem-based fire management plans shall: (1) provide for firefighter and public safety; (2) promote the reintroduction of fire as a natural ecological process through use of various suppression strategies and prescribed fire; and (3) be integrated with fire management plans of adjacent administrative units, particularly with respect to smoke management.

**Rationale:** Having fire management plans in place will provide for restoration of fire in appropriate circumstances. The plans can provide direction to suppression teams. In areas rated as high or moderate risk for intense fire, crown fire, and/or urban-wildland-interface, it is particularly important that management plans include discussion of appropriate suppression actions to provide for safety and allow for natural ecological process.

Public health and environmental quality are important considerations in fire management plans and activities. Trade-offs will often exist. Short-term consequences may be acceptable to promote long-term gains and sustainability. Elements of fire management programs must be designed to promote healthy, sustainable environments. Both naturally occurring fuels and hazardous fuel accumulations resulting from resource management and land use activities must be addressed.

**B-O19. Objective:** Use fire to restore and/or sustain ecosystem health based on sound scientific principles and information and balanced with other societal goals, including public health and safety, air quality, and other specific environmental concerns.

**Rationale:** The relative success of fire suppression efforts of the past several decades has caused numerous unintended effects. Some of these include: build-up of fuels, increases in less-fire-resistant species, and more multi-story stands. These have led to changes in fire regimes from non-lethal to lethal and wildland fires that cause considerable damage to resources and considerable costs to suppress. The Federal Wildland Fire Policy and Program Review has directed federal agencies to make numerous changes to reverse the adverse effects across vast areas.

**B-G27. Guideline:** Consider the use of non-fire treatments (for example, mechanical, chemical, biological, and manual methods) where wildland fire cannot be safely reintroduced because of hazardous fuel build-ups, particularly in urban-rural wildland interface areas.

**B-G28. Guideline:** Consider conducting prescribed fires during the time of year when fires would have normally occurred if resulting effects match desired outcomes and fire can be controlled within a defined target area.

**B-O20. Objective:** Maintain preparedness planning and fire suppression programs to prevent unacceptable loss from fire.

**Rationale:** Integrating fire into land management is not a one-time, immediate fix but a continual, long-term process. It is not an end in itself but rather a means to a more healthy ecosystem. Agency commitment to sharing information internally and externally regarding fire and other ecological processes is needed. Adaptive and innovative fire and land management is limited when agency employees and the public misunderstand or remain skeptical about the role of fire. The ecological and societal risks of using and excluding fire need to be better clarified and quantified to allow open and thorough discussions among managers and the public.

**B-O21. Objective:** Coordinate and collaborate the planning and implementation of watershed-scale wildland fires across administrative boundaries to manage fuels, restore or maintain ecosystems, and obtain desired distribution of vegetation patches and patterns.

**Rationale:** Federal, state, tribal, and local interagency coordination and cooperation are essential to implement successful fire management programs. Increasing costs and smaller work forces require that public agencies pool their resources to successfully deal with increasing and more complex fire management tasks. Collaboration among federal agencies and between federal, state, tribal, and local governments, and private entities results in a mobile fire management work force available for public needs.

**B-O22. Objective:** Prescribed fire should be considered in designated wilderness areas where it has been determined that “wildland fire use for resource benefits” will not achieve desired rates of ecosystem maintenance or restoration.

**Rationale:** In some areas designated as wilderness, the number and acres of fires managed to achieve resource benefits will not be adequate to mitigate effects of insects, disease, or unplanned wildland fires; reduce crown fire potential; reduce fire and smoke risk to urban–rural–wildland interface; or protect important aquatic and terrestrial areas. In these cases, prescribed fire could be used to achieve resource benefits.

## Road Management

### Description and Management Intent

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*The challenge is to design and maintain a road system that provides the benefits of access but minimizes adverse road-related effects on other resources, such as water quality, fish, and wildlife.*

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The road system on federally administered lands is extensive and diverse. New science information, particularly that generated by the ICBEMP Science Integration Team and Science Advisory Group, indicates that roads are a significant modifier of landscapes and ecological processes. At the same time, roads are needed for public access and tribal needs as well as for accomplishment of many management objectives. The challenge is to design and maintain a road system that provides the benefits of access but minimizes adverse road-related effects on other resources, such as water quality, fish, and wildlife.

ICBEMP road direction is intended to accomplish the following:

1. Roads determined to be no longer needed will be closed or obliterated and ecological values restored;
2. Roads determined to be needed for land management, public access, and tribal rights will be safe, promote efficient travel, and be improved as needed to minimize adverse environmental effects;
3. New road construction will be reduced from past levels. New roads into watersheds that are currently unroaded or have very few roads will be rare. New roads into such areas could occur following analysis that demonstrates that access is needed to prevent or address imminent environmental damage or provide for valid existing rights.

Generally, most issues surrounding road condition, risk, and management opportunity for restoration are expected to be more significant on forested lands than on rangelands.

Science-based roads analysis has been developed to provide the tool to systematically and objectively evaluate road networks and help distinguish variability in road condition and risk. Roads analysis provides an ecological approach to transportation

planning, addressing existing roads and future roads including those planned in unroaded areas. Roads analysis is intended to be the systematic, consistent, and integrated approach to transportation planning. ICBEMP road management direction incorporates use of roads analysis and Subbasin Review to provide information and context needed to effectively and efficiently reduce road-related adverse effects. Results of roads analysis is aimed at producing information and maps that will display management opportunities and risks of existing roads to better address future needs, budgets, and environmental concerns. Roads analysis is expected to provide the foundation for road-related decisions and facilitate development of transportation plans such as Access and Travel Management plans and other NEPA documents. Decisions on individual roads would be made at the local level, based on appropriate analysis and collaboration. Collaboration would include interested parties such as affected tribes, state and local government, and any state-established road councils.

The overarching intent for roads management within the ICBEMP is to progress toward a smaller transportation system that can be maintained into the future with minimal environmental impact. In recognizing that this intent cannot be met instantaneously, the direction intends for the use of a staged approach that concentrates short-term efforts on reducing road-related adverse effects, while determining the long-term road system needs and locations in a manner that maintains choices for future generations. Road management guidance in existing plans such as the Grizzly Bear Recovery Plan and newer land use plans already moves in this direction. The biggest change to the existing road system is expected in areas that are highly roaded and have high road-related risks to resource values, where action has not already been taken to address the problem.

### **Roads Analysis**

**B-O23. Objective.** Determine the long-term road system that supports natural resource objectives and provides access to public lands while minimizing road-related risks and adverse effects from existing and future planned roads.

**Rationale:** The road system on federally administered lands is extensive and needs to be reconfigured. The intent of implementing roads direction is to have fewer miles of roads and to have these roads be of low impact in low-risk locations.

**B-O24. Objective.** Use existing information during Subbasin Review and EAWS to characterize those landscape elements that contribute to or influence the

hazards and risks associated with roads across the subbasin, to provide context and facilitate prioritization for subsequent finer scale roads analysis.

**Rationale:** Subbasin Review can provide a broad discrimination of hazard and risk by identifying general relationships among hazards to aquatic and terrestrial systems and elements such as geology, slope position and angle, precipitation, drainage density, and intensity of road networks. This information can provide context and identify priorities and the appropriate geographic extent for subsequent roads analysis. Subbasin Review is not intended to provide detailed road maps or information but would rely more on GIS and physiographic information to help interpret detailed information. The draft Subbasin Review Guide provides guidance regarding characterization and prioritization of risks and opportunities for this mid-scale analysis.

**B-S22. Standard.** Roads analysis shall be incorporated into or conducted concurrently with watershed-scale analysis, such as EAWS, the analyses produced in compliance with the 303D protocol that may result in a water quality restoration plan, and/or site-specific project analysis.

**Rationale:** Roads analysis is the tool to assist land managers in balancing road systems objectives and provides the context and information needed for assessing tradeoffs and risk prior to decision-making. It is intended to be flexible and driven by road-related issues important to the public and to managers. It promotes a multi-scale approach to assure that these issues are examined in context. The process provides a set of analytical questions as guidance that can be used to tailor analysis techniques to individual situations. The questions address road relationships to aquatic and riparian resources, water quality, terrestrial wildlife, ecosystem function, economics, commodity production, access, minerals, range, recreation, and other resources.

The products from roads analysis would have a differing form depending on scale. The objectives of roads analysis *at the watershed scale* are: (1) to provide context for site level design and (2) refine information about risks and hazards based on the description of populations of landscape elements (such as locations, magnitudes, and frequencies). The objective of roads analysis *at the site-specific project scale* is to systematically collect information with regard to pending risks and hazards from existing and future roads to: (1) identify potential resource problems (channel elongation, generation of mass wasting, migration barriers); and (2) determine potential short- and long-term effects on values at risk (aquatic species and other beneficial uses), to provide an adequate evalua-

tion for design and implementation of proposed activities. Field level inventory is expected prior to implementing road restoration or other road related activities. In some cases field level information may be desirable to address road risk and complete data gaps identified through roads analyses conducted at the watershed scale.

**B-S23. Standard.** When conducting roads analysis, consult federally recognized tribes to address access to treaty resources and culturally significant areas.

**B-O25. Objective.** New road building should rarely occur in watersheds that are currently unroaded or have very few roads. New roads into these areas could occur following roads analysis and/or NEPA analysis that considers the larger watershed context. These analyses should weigh the relative habitat values of species potentially affected by roads, such as anadromous fish and wide-ranging carnivores, against the need to address large-scale environmental damage or public safety. See also management direction for A1 and A2 aquatic subwatersheds regarding new road building.

**B-G29. Guideline.** In watersheds that have few or no roads and where there is a high risk to resource values from uncharacteristic fires, consider using existing roads and other methods of transportation to manage fuels.

### **Access and Travel Management Plans**

**B-O26. Objective.** In the development or revision of Access and Travel Management Plans, ensure the public (including appropriate state, county, and tribal entities) is involved and that access to public lands is retained to the extent possible consistent with maintaining or achieving objectives and standards designed to address terrestrial, wildlife, aquatic, and riparian issues.

**Rationale:** While roads have been shown to be detrimental to terrestrial, aquatic, and riparian resources, they also represent a substantial investment in transportation capability that generates very high use values for the public, existing rights of way, and access value to land management agencies. A major cause of terrestrial species mortality, disturbance, and habitat loss is related directly to human access. Stresses caused by access to wintering areas also have been demonstrated to cause problems for a number of species. These adverse effects would be reduced by implementation of actions to reduce the risk of wildlife displacement and mortality associated with human access (such as location and timing of seasonal and permanent closures) through road management

decisions in Access and Travel Management Plans or other transportation plans.

**B-S24. Standard.** Access and Travel Management Plans or other transportation plans shall be developed or revised within the next 10 years to address risks identified in the roads analysis. These plans shall identify long-term transportation needs (including needs for public access) and road maintenance practices.

**Rationale:** The intent of this standard is that decisions on management of roads should be made at the local level with involvement from interested and affected parties (including local, county, and tribal entities) through the local Access and Travel Management Plan processes.

### **Road Construction and Reconstruction**

**B-O27. Objective.** To ensure attainment of aquatic, terrestrial, and riparian objectives, prevent or minimize adverse effects from road and landing construction and reconstruction.

**B-S25. Standard.** New roads and other transportation facilities should be located outside of RCAs unless effects of other alternatives are greater to aquatic, riparian, water quality, and/or terrestrial resources, as supported/determined by the appropriate analysis and decision-making process, including, as appropriate, ESA consultation. When crossing RCAs with roads, appropriate measures shall be used to mitigate adverse effects.

**Rationale:** Roads create numerous negative effects within riparian areas including sedimentation, habitat destruction, and increased human use. The intent of this standard is to prevent and reverse these adverse effects. However, it is recognized that at times it will be preferable to cross an RCA with a road rather than affect upland areas by building a more damaging road in order to avoid a stream crossing.

**B-S26. Standard.** Construction of new and reconstruction of existing road crossings of streams and rivers that currently or historically supported native fish species shall maintain and restore fish passage, fish spawning, and channel stability unless passage would allow undesirable non-native fish distribution expansion that would result in adverse interactions with native fish.

**B-O28. Objective.** Avoid disruption of hydrologic flow paths and processes by locating, designing, and

## Definitions

The 12 “*families*” represent aggregates of 91 broad-based terrestrial vertebrate “species of focus.” These 91 species were placed into 40 groups based on their source habitat uses. The groups were later combined into the 12 Terrestrial Families, again based on habitat requirements. The original 91 species were selected based on whether: (a) their habitats might require further assessment and management at broad spatial scales within the basin, (b) their population size is known or suspected to be declining (could be related to habitat decline or not), and (c) their habitats can be estimated reliably using a large mapping unit (247 acres or 100 hectares) and broad-scale methods of spatial analysis. Habitats of five of those Families have been determined by Wisdom et al. (in press) to be most in decline compared to historical levels (see Terrestrial Families 1, 2, 4, 11, and 12 box on the following page).

**Source habitats** are those characteristics of vegetation that support long-term species persistence; characteristics of vegetation that contribute to stable or positive population growth for a species in a specified area and time. These source habitats are described using the dominant vegetation cover type and the structural stage. There are 157 cover type and structural stage combinations in the ICBEMP that can be estimated reliably at the 247-acre (100-hectare) patch scale. Various combinations of these cover type–structural stages make up the source habitats for the 12 Terrestrial Families, and provide the range of vegetation conditions required by these species for food, reproduction, and other needs.

— from *Source Habitats for Terrestrial Vertebrates* (Wisdom et al. in press).

conducting road construction and reconstruction to avoid unstable and potentially unstable lands.

### Terrestrial Source Habitats

#### Description and Management Intent

The objectives, standards, and guidelines in this section are aimed at changing declining trends in terrestrial habitats in base level areas (all lands administered by the Forest Service or BLM in the project area). The intent of this section is to maintain many of the important vegetation characteristics, such as species composition, vegetation structure, snags, and coarse woody debris, which various terrestrial species need so they can survive and reproduce.

Direction is intended to be applied to source habitats for 12 aggregates of terrestrial birds, mammals, and reptiles called “families” in *Source Habitats for Terrestrial Vertebrates* (Wisdom et al. in press), unless otherwise specified. Source habitats are those characteristics of vegetation that contribute to a species’ population maintenance or growth over time and within an area. These source habitats are described using the dominant vegetation cover type and the structural stage, various combinations of which make up the source habitats for the 12 Terrestrial Families and provide the range of vegetation conditions required by these species for cover, food, reproduc-

tion, and other needs. Terrestrial Families 1, 2, 3, and 4 depend mostly on forested source habitats; Terrestrial Families 10, 11, and 12 use mostly rangeland source habitats; and Terrestrial Families 5, 6, 7, 8, and 9 are associated with a combination of forest and rangeland source habitats. The habitats of species affiliated with Terrestrial Families 1, 2, 4, 11, and 12 have been determined by Wisdom et al. (in press) to be have declined in geographic extent most substantially from historical to current periods within most RAC/PAC areas (see Terrestrial Families 1, 2, 4, 11, and 12 box).

The management intent is also to preserve options for these source habitats in the short term so they can possibly be restored in the long term. This fits into the overall risk management strategy to conserve and expand, in the short term, the source habitats that have shown the greatest decline. The long-term goal is to have a sustainable mix of habitats that are patterned to be consistent with the landform, climate, biological, and physical characteristics of the ecosystem, and that provide for a network of source habitats to meet terrestrial species needs.

#### Forest Composition and Structure

**B-O29. Objective.** Increase the abundance of shade-intolerant species such as western white pine, ponderosa pine, and western larch in the moist and dry forest potential vegetation groups (PVGs), and whitebark pine in the cold forest PVG. Increase the extent of these species in pure stands, and in mixed

## Terrestrial Families 1, 2, 4, 11, and 12

Terrestrial Families 1, 2, 4, 11, and 12 represent groups of species associated with habitats that have been determined by Wisdom et al. (in press) to have declined substantially in geographic extent in the project area compared to historical amounts. The five families, source habitats, and associated species are:

1. Terrestrial Family 1 (old forest, low elevation source habitat) includes white-headed woodpecker, white-breasted nuthatch, pygmy nuthatch, Lewis woodpecker (migrant population), and western gray squirrel.
2. Terrestrial Family 2 (old forest, broad elevation source habitat) includes blue grouse (winter), northern goshawk (summer), flammulated owl, American marten, fisher, Vaux's swift, Williamson's sapsucker, pileated woodpecker, Hammond's flycatcher, chestnut-backed chickadee, brown creeper, winter wren, golden-crowned kinglet, varied thrush, silver-haired bat, hoary bat, boreal owl, great gray owl, black-backed woodpecker, olive-sided flycatcher, three-toed woodpecker, white-winged crossbill, woodland caribou, and northern flying squirrel.
3. Terrestrial Family 4 (early seral forest source habitat) includes the lazuli bunting.
4. Terrestrial Family 11 (sagebrush source habitat) includes sage grouse (summer), sage grouse (winter), sage thrasher, Brewer's sparrow, sage sparrow, lark bunting, pygmy rabbit, sagebrush vole, black-throated sparrow, kit fox, and loggerhead shrike.
5. Terrestrial Family 12 (grassland and open-canopied sagebrush source habitat) includes Columbian sharp-tailed grouse (summer), clay-colored sparrow, grasshopper sparrow, and Idaho ground squirrel.

stands where it is ecologically appropriate. Favor retention of emergent large trees, especially in roaded and/or harvested areas. Create stands with stocking levels and fuel loads that are more resilient to wild-fire, insects, and disease. Blister-rust-resistant western white pine and whitebark pine planting stock should be used when possible.

**Rationale:** In some areas in the dry forest PVG, ponderosa pine is not endemic (native to a certain region), and Douglas-fir fills its niche as the shade-intolerant species. In these areas, it is desirable to restore or increase the abundance of Douglas-fir in patches that are consistent with the landform, climate, biological, and physical characteristics of the ecosystem.

Shade-intolerant species are important from an ecological perspective because they are resilient to the predominant fire regime. To prevent further declines of forest ecosystem processes and functions, timber harvest should be done for stewardship reasons and be consistent with ICBEMP objectives such as: reducing risk of severe fire behavior, reducing risk of severe fire effects, promoting shade-intolerant tree species, promoting scarce terrestrial habitats, and increasing the forest's resiliency to disturbance. Clearcutting is appropriate when done for ecological reasons such as the need to regenerate species (for example western white pine and western larch) or to meet other objectives such as creating scarce habitat.

Scattered snags or emergent trees are important to many wildlife species that use forest stand-initiation structural stages. *Emergent trees* are those with crowns reaching above the predominant crown layer, providing structural diversity. Large trees are also important to many wildlife species, and adaptation of these trees to frequent low intensity fire regimes has important ecological ramifications. The size of a "large tree" is relative; it depends on species, structural stage, predominant disturbance regime, and site productivity.

**B-S27. Standard.** Maintain and/or restore large shade-intolerant trees and snags in densities that are consistent with the range of historical conditions. Large shade-intolerant trees and snags, especially ponderosa pine and western larch, should be retained where they are needed to meet historical levels and if their retention does not violate safety standards or preclude attainment of overall resource objectives.

**Rationale:** *Large trees* is a relative term dependent on species and site. Large trees are a future source of large snags, and large snags are a future source of coarse woody debris, another important habitat component for many species. It is important to have present and future sources of large trees and snags at adequate levels though time. Larger snags are generally better than smaller snags because they exist longer. Large trees and/or snags are essential habitat

components for many species in Terrestrial Families 1, 2, 7, 8, and 9 (Wisdom et al. in press).

**B-G30. Guideline.** Management tools such as thinning and prescribed fire may be used to make forests dominated by shade-intolerant species more resilient to fire, insects, and disease. Favor large trees by giving them growing space on at least two or three sides and removing nearby fuel ladders.

**B-G31. Guideline.** Seedtree or group selection methods may be used to regenerate western white pine where seed sources exist, and large openings can be created in the forest for planting. Scattered large residual trees and snags could be left in these openings to make them more valuable to wildlife species that depend on these habitat features.

**B-G32. Guideline.** Prescribed and managed wildland fire may be used to assist regeneration in healthy whitebark pine stands. Where the stand is infested with blister rust, blister-rust-resistant planting stock could be used if available.

**B-G33. Guideline.** Look for opportunities to use natural regeneration where the species, seed source, seedbed, and moisture conditions are all favorable. Rely on natural regeneration following stand-replacing wildfire if a seed source of the desired species exists.

**Rationale:** Shade-tolerant trees in forests that have regenerated from natural seeding have adapted to site conditions and local climate over thousands of years. The genetics to perpetuate those characteristics are found in the seeds produced by the shade-tolerant trees. If that seed source is lost, so is its genetic diversity.

Achieving successful natural regeneration requires that: the overstory trees of the desired species are capable of producing viable seed, a mineral soil seedbed is available for germination, there is adequate water and lack of competition to allow the seedlings to survive, and there is enough light to allow the seedlings to carry on photosynthesis and grow.

**B-G34. Guideline.** Consider controlling livestock grazing in forests where planted or naturally regenerated seedlings are vulnerable to browsing or trampling.

**Rationale:** Although livestock grazing can have beneficial effects on tree seedlings through reductions in vegetation competition, germinants and small seedlings are often trampled and/or browsed by livestock. The result is that trees and important native

herbs and shrubs can be killed, and growth can be slowed or misshapen. Terrestrial vertebrates that depend on the stand-initiation stage of forest development depend on a rich supply of native herbs and shrubs for nesting and foraging. Livestock grazing can reduce the availability of these resources.

**B-G35. Guideline.** Use a combination of harvesting, mechanical treatments, and/or prescribed fire to modify forest composition to dominance by shade-intolerant species (such as ponderosa pine, western larch, Douglas-fir).

**B-G36. Guideline.** Where true firs are infected, consider reducing susceptibility of stands to annosus root disease by: lowering the number of entries into stands, shortening rotations, decreasing wounding during harvest, or manipulating species mixtures by changing to ponderosa pine, western larch, or Douglas-fir.

**B-G37. Guideline.** Consider reducing the susceptibility of stands to laminated root rot by avoiding shelterwood cuts which favor regeneration of susceptible shade-tolerant species or by switching to species that are more resistant to root rot, such as western redcedar, pines, and larch, where appropriate.

**B-G38. Guideline.** Consider reducing the susceptibility of stands to Armillaria root disease by: using thinning, harvesting, and/or prescribed fire to increase vigor; pre-commercial thinning sites of moderately low productivity that are infected; or planting shade-intolerant species such as larch, pine, and hardwoods in infected areas. Minimize subsequent entry in moist forest PVG stands.

**B-G39. Guideline.** Consider removing root-disease-infected stumps after thinning or harvest to prevent the infection of future stands on highly productive sites. Minimize soil damage and reforest with early successional species that are most likely to tolerate the pathogen and soil damage.

**B-O30. Objective.** [Terrestrial Families 1 & 2] *In the short term*, maintain and prevent loss of old forest in dry and moist forest potential vegetation groups (PVGs). Maintain old forest patch sizes consistent with the landform, climate, and biological and physical conditions of the ecosystem. Identify single story and multi-story old forest stands in the interior ponderosa pine, Pacific ponderosa pine, and Sierra Nevada mixed conifer cover types; and multi-story old forest stands in the Douglas-fir, western larch, western white pine, aspen, and cottonwood-willow cover types. Take steps to prevent the loss of this relatively scarce habitat from natural or human-caused disturbances. Actively manage to promote

their long-term sustainability and to preclude uncharacteristically severe wildfire through activities such as prescribed fire, stewardship thinning, and/or other vegetation/biomass management techniques.

Because the determination of old forest depends on regional location within the project area (such as climate and geology), tree species, and site productivity (such as soils, aspect, slope, water), and because old forest is defined using a number of variables (see Rationale, below), BLM and Forest Service managers should determine old forests using minimum characteristics developed by Green et al. (1992) for lands within the Forest Service Northern Region (Idaho north of the Salmon River and Montana), Hamilton (1993) for lands in the Intermountain Region (Idaho south of the Salmon River), and USDA Forest Service (1993) for lands in the Pacific Northwest Region (Washington and Oregon).

Promote emergent and large trees, snags, and coarse woody debris levels that can be sustained through repeated prescribed fire activities that will be needed to restore and maintain the stands. Use appropriate vegetation management techniques to protect large trees from disturbances (such as fire, insects, or disease) which could convert old forests to an early or mid seral stage.

**Rationale:** Old forest is defined primarily using such variables as: (1) number of trees per acre of a minimum diameter at breast height (DBH), (2) minimum stand age, (3) basal area, (4) tree decadence, (5) snag levels, (6) downed wood levels, and some other variables. The result is that the characteristics of old forest will be different between different forests, for example, between ponderosa pine and lodgepole pine forests. See Appendix 17a and 17b for definitions of old forest as established by each of the three Forest service regions (Northern, Intermountain, and Pacific Northwest) that make up the ICBMEP project area. These three sets of criteria for old-growth ecosystems will be used as guidance by Forest Service and BLM personnel at the forest, district, and field office levels during implementation of the ICBEMP management direction.

Overall, the project area has shown a great reduction in single story and multi-story old ponderosa pine forest as well as other old forest types from historical to current periods (Hann, Jones, Karl, et al. 1997, Wisdom et al. in press). Terrestrial species dependent on these habitats have been pushed to use other structural stages in cover types that have expanded over the same time interval—for example, multi-story interior Douglas-fir. Therefore, even though we recognize that some multi-story interior Douglas-fir

forests currently exist where they did not grow historically, they should be perpetuated in the short term or longer to minimize the risk to the terrestrial species that depend on these forests. Managing short-term risk to these species is part of the terrestrial strategy.

In the short term, land managers should strive to promote old forest conditions and protect old forests from both natural and human-caused disturbances (such as harvest and wildfire) because old forests and their associated species are in such short supply. As the amount of old forest on the landscape increases through time to desired levels consistent with natural disturbance regimes, the locations of old forest can begin to change over time. Further, amounts of old forest can vary over time within desired limits, as some patches of old forest are burned, harvested, or otherwise disturbed while some patches of mid-seral forest mature, developing old forest conditions. *In the long term*, the location of old forest patches is not static; areas move in and out of having old forest characteristics, especially in cold and moist forest PVGs where a high proportion of the fire regime consists of stand-replacing fire. *Emergent trees* are those with crowns reaching above the predominant crown layer, providing structural diversity.

Preventing the loss of old forest might include a “wildland fire use for resource benefit” program, prescribed fire program, removal of ladder fuels and smaller competing trees, a program of wildfire suppression, and conversion of some multi-story to single story structure.

Old forest aspen is an important cover type for terrestrial species. However, when aspen stands become decadent, they tend to lose their ability to regenerate well. Therefore, maintaining aspen on the landscape requires a cyclical and timely disturbance so that it can be regenerated before it gets too old to be sustained.

#### **Snags, Coarse Woody Debris**

**B-O31. Objective.** Maintain and/or recruit adequate numbers, species, and sizes of snags and levels of downed wood to meet the needs of wildlife, invertebrates, fungi, bryophytes, saprophytes, lichens, other organisms, long-term soil productivity, nutrient cycling, carbon cycles, and other ecosystem processes. Consider the natural variability in number and size of snags and downed logs across landscapes, through time, and in the context of biomass levels under which soils and species evolved. Manage for snag species appropriate to the site.

**Rationale:** Snags and downed logs are important components of forest and woodland ecosystems. They provide essential habitat for wildlife, invertebrates, fungi, bryophytes, saprophytes (plants that derive nourishment from dead or decaying organic matter), lichens, and other organisms. They store carbon and nutrients and provide site improvement following extreme disturbance. Snags and coarse woody debris are closely tied, because snags are a future sources of downed logs and coarse woody debris, which recycle nutrients and provide habitat for both plants and animals. Large diameter snags are especially valuable to a wide array of species because they offer greater surface area, more opportunity for cavities, and greater longevity. Hann, Jones, Karl, et al. (1997) found that snag and coarse woody debris levels have declined in roaded and harvested areas. Providing for the appropriate species of snags in a stand, in addition to the appropriate numbers and sizes of snags, is necessary to maintain the value of the stand for wildlife. Shade-intolerant snag species have declined substantially in geographic extent from historical to current periods and are key to providing for species in Terrestrial Families 1 and 2.

Snags usually are not distributed evenly on a natural landscape. The number and pattern of snags should vary across the landscape based on site classification (potential vegetation type), successional stage, and disturbance history. In general, more productive sites such as north slopes, moist sites, and riparian areas should support more snags; the least productive sites should support the fewest snags. Very early successional stages, soon after a disturbance, should have highest number of snags on site, followed by late seral stages. Because many wildlife species find groups of snags more useful than evenly distributed snags on the landscape, there should be groups as well as single snags.

Coarse woody debris is important to a wide variety of wildlife species, invertebrates, and microorganisms as habitat and food source. In addition, coarse wood is essential to long-term soil productivity and several ecosystem processes. It provides soils with a source of carbon and nutrients, and sometimes provides a reservoir for water. Size and amount of coarse woody debris cannot be expected to be evenly distributed across landscapes. It varies with topographical features, climate, slope, aspect, habitat type, successional stage, management practices, and many other factors. Amount of coarse woody debris is an important factor in wildland fire intensity and severity, so levels are intended to be consistent with the predominant fire regime and prescribed fire objectives.

**B-S28. Standard.** Maintain and/or recruit snag and coarse woody debris numbers, species, and sizes within the desired range for a RAC/PAC area as established in Standard B-S29(S2) and B-S29(S3) or for a watershed through the process in Standard B-S30(S2). If it is not possible to estimate snag numbers or coarse woody debris levels within a watershed, then leave or recruit the number of snags and levels of coarse woody debris indicated by the desired range. If current snag numbers or coarse woody debris levels are estimated to be less than the desired range for a watershed, then leave or recruit appropriate amounts of snags and coarse woody debris to move toward the established range.

**Rationale:** When estimates show that current numbers and sizes of snags or levels of coarse woody debris in a watershed are above or below the desired range, based on use of a process described in standard B-S30(S2) or on the tables from standard B-S29(S2) and B-S29(S3), there is an opportunity to move toward the desired range (1) whenever vegetation management activities are undertaken, and (2) as a separate restoration activity aimed at restoring old forest structure in watersheds where EAWS indicates that stands with old forest characteristics are below desired levels. The needed precision of the estimates varies with the scale of the analysis, with less precise estimates needed for an EAWS than for site-specific NEPA analysis.

**B-S29(S2). Standard for Alternative S2 Only.** Prior to completing the process described in standard B-S30(S2), the tables in Appendix 12 shall be used to determine snag numbers and coarse woody debris levels whenever vegetation management is done.

**Rationale:** The tables in Appendix 12 were developed to assure that appropriate numbers of snags and levels of coarse woody debris would be maintained while standards that are more appropriate for local conditions are developed or verified.

**B-S29(S3). Standard for Alternative S3 Only.** The tables in Appendix 12 shall be used to determine snag numbers and coarse woody debris levels whenever vegetation management is done.

**Rationale:** The tables in Appendix 12 were developed to assure that appropriate numbers of snags and levels of coarse woody debris would be maintained. In Alternative S3, locally appro-

appropriate snag numbers and coarse woody debris levels may be developed or verified, but it is not required.

**B-S30(S2). Standard for Alternative S2 Only (no parallel standard for Alternative S3).**

Within five years, administrative units or groups of units (national forests/BLM districts) shall modify default numbers shown on the tables in Appendix 12 to determine (1) numbers and sizes of snags and (2) coarse woody debris levels appropriate for local conditions. In making these determinations, units shall use the snag analysis and coarse woody debris processes described in Appendix 12, or they shall use or develop a similar process appropriate for local conditions. If local units use or develop a new process, it must have a scientific basis, using information from the literature and/or studies on historical conditions to determine snag sizes and average numbers. When using any of these processes, administrative units shall collaborate with appropriate agencies, governments, or groups so that this standard is applied consistently. If administrative units currently have standards that were developed using a process they believe meets the intent of this standard, then they need only verify its basis on current science to continue its use.

**Rationale for Alternative S2:** This standard assures that all administrative units will have snag and coarse woody debris standards appropriate for local conditions within five years.

**Rationale for Alternative S3:** Under Alternative S3, the tables in Appendix 12 would be used to determine snag numbers and coarse woody debris levels. The direction to develop a process appropriate for local conditions would not be required.

**B-G40. Guideline.** Consider leaving or recruiting additional snag numbers and coarse woody debris levels in areas that have been burned.

**B-G41. Guideline.** Consider estimating large snag densities as part of EAWS. Where densities are below the established, desired ranges, initiate management activities to increase snag levels through snag recruitment.

### **Rangelands Composition and Structure**

**B-O32. Objective.** Maintain upland rangelands in proper functioning condition by addressing the

biological needs as indicated by vegetation composition, diversity, structure, cover, vigor, and recruitment, and the physical needs as indicated by erosional flow patterns, soil movement, litter, soil crusting, and compaction.

**Rationale:** Proper functioning condition of upland rangelands is reached when the biological and physical components display the characteristics of a dynamic, diverse, healthy ecosystem that is able to withstand natural disturbance events. Once the components are in place then the mix of plant species composition and structural characteristics (seral conditions) can be managed to meet various ICBEMP objectives.

**B-O33. Objective.** [Terrestrial Families 11 &12] Manage species composition (diversity), structure and age class, cover, density, and surface litter on native rangeland plant communities, appropriate to soil type, climate and landform, to maintain the following source habitats (rangeland cover types): big sagebrush, low sagebrush, mountain big sagebrush, salt desert shrub, fescue-bunchgrass, wheatgrass-bunchgrass, and antelope bitterbrush-bluebunch wheatgrass.

**Rationale:** One of the biggest tasks for land management agencies is the maintenance of existing native rangeland communities in healthy condition. With natural and human-caused disturbances, the task of rangeland health maintenance is difficult. Providing the historical mix of species composition, structure, and cover is paramount to meeting source habitat needs for the many terrestrial species that rely on rangelands during all or part of their life cycle.

**B-O34. Objective:** Rangelands seeded with mixtures should function to maintain life form diversity, forage production, native animal habitat, nutrient cycling, energy flow, and hydrologic cycle.

**Rationale:** Rangeland seedings have been used to take livestock grazing pressure off the native rangelands in some grazing systems. In serving this purpose some rangeland seedings are managed mainly for forage production for livestock and not for the composition and structural habitat needs of terrestrial species. This objective recognizes that these seedings also should provide habitat for terrestrial species and must maintain the characteristics of healthy source habitats.

**B-O35. Objective:** At a minimum, rangeland seedings should function to maintain forage production, nutrient cycling, energy flow, and the hydrologic cycle.

**Rationale:** Some seedings, such as older crested wheatgrass seedings, are essentially monocultures specifically used for forage production. This standard recognizes that even these seedings must meet certain minimum functional and process needs to meet overall ecosystem health at larger scales.

**B-O36. Objective:** Exotic plant communities, other than seedings, should meet minimum requirements of soil stability and maintenance of existing native plants. These plant communities should be rehabilitated to perennial communities of diverse composition and structure when feasible, cost-effective methods are developed.

**Rationale:** It is the intent of this objective to rehabilitate exotic plant communities, such as cheatgrass, back to the perennial plant communities that occupied these sites prior to human disturbances. However, it is realized that this task is easier said than done, because poor soils and low precipitation make rehabilitation difficult or impossible to do at this time. Until technology and cost-effective measures become a reality, exotic plant communities should be managed to provide basic soil stability needs and to protect remnant perennial plant species.

## **Aquatic/Riparian/Hydrologic Component**

### **Description and Management Intent: Overall**

The overall intent of base level aquatic/riparian/hydrologic direction is to prevent degradation to and improve conditions of aquatic and riparian habitat.

This should provide habitat conditions on Forest Service- and BLM-administered lands to sustain aquatic and terrestrial species and provide water of sufficient quality to support beneficial uses.

In the base level section, management objectives and standards are provided for riparian conservation areas (RCAs), riparian influence areas, watershed condition indicators, and water quality. Additional base level direction for aquatic/riparian/hydrologic resources is found in the Landscape Dynamics and Terrestrial and Aquatic Species sections. Additional direction for A1 and A2 subwatersheds and aquatic and hydrologic restoration follows later in this chapter.

## **Riparian Conservation Areas (RCAs)**

### **Description and Management Intent**

The primary management emphasis of riparian conservation areas (RCAs) is to maintain, conserve (protect), and/or restore aquatic and riparian-dependent terrestrial resources. Proper ecological function in RCAs is crucial to maintaining aquatic ecosystems and riparian-dependent resources. RCAs are intended to do the following:

- a. Help maintain and restore riparian structures and functions;
- b. Benefit fish and riparian-dependent resources;
- c. Enhance conservation of organisms dependent on the transition zone between upslope and the stream; and
- d. Improve connectivity of travel and dispersal corridors for terrestrial animals and plants, and aquatic organisms.

## **Definitions**

A **riparian ecosystem** is an area that is a transition between terrestrial and aquatic ecosystems. It includes streams, lakes, wetlands, and adjacent vegetation communities and their associated soils which have free water at or near the surface and whose components are directly or indirectly attributed to the influence of water. Riparian areas provide valuable habitat for many non-vascular plants, vertebrates, and invertebrates.

**Riparian conservation areas (RCAs)** are delineated areas that encompass riparian ecosystems. Management activities in RCAs will be governed by ICBEMP objectives and standards when the ROD is signed.

Management activities (such as silvicultural treatments, livestock grazing, and road construction) within or affecting RCAs that would not maintain existing conditions or lead to improved conditions would not meet the intent of ICBEMP standards and objectives. These activities either would not be implemented or would be modified.

The management focus is to achieve ICBEMP objectives over the long term. The intent also is to avoid short-term impacts that reduce the riparian area's ability to achieve objectives over the long term. It is recognized that some short-term impacts may occur from activities that are deemed desirable and consistent with objectives (for example, road maintenance, culvert replacement); however, all short-term risks are not categorically acceptable. The decision to take short-term risks must be made, to the extent possible, within the context of information generated through the step-down process. For example, when Subbasin Review and EAWS are completed prior to designing site-specific activities, the knowledge gained should enhance understanding of risks at various scales and provide a broader context and stronger informational support for management activities that carry short-term risk. However, it is recognized that this larger-scale information context may not always be available.

### **RCA Management Direction**

The following objectives and standards apply to management activities and land uses within riparian conservation areas on Forest Service- or BLM-administered land. The objectives were designed, as noted earlier, to be assessed at a watershed or larger scale and not at a site scale. However, in the absence of subbasin and/or watershed scale context, projects will need to be evaluated as to their consistency with and contribution to these objectives within the limited context of the project. In the absence of subbasin and/or watershed scale context, the project has to be evaluated against the objectives in isolation. This should neither stop emergency actions that would attain management objectives, nor impede restoration actions that need to occur (such as road obliteration or culvert replacement). Short-term risks may be taken in these circumstances, but these actions should not prevent attainment of objectives over the long term. The ideal situation is Subbasin Review and/or EAWS preceding the design of management activities within RCAs. This facilitates a risk management strategy that would allow site-specific NEPA analysis to evaluate consistency with objectives within a large context. This larger context for risk assessment would

help identify temporal (short-term and long-term) and spatial (placement on the ground) opportunities to enhance conservation and restoration and where short-term risks may be taken to achieve long-term management objectives.

**B-O37. Objective.** Maintain and improve physical integrity of aquatic ecosystems, including shorelines, banks, and bottom configurations.

**B-O38. Objective.** Maintain and improve riparian and wetland vegetation to:

- a. Provide an amount and distribution of woody debris sufficient to sustain physical and biological complexity characteristic of natural aquatic and riparian ecosystems;
- b. Provide adequate summer and winter thermal regulation within riparian and aquatic zones;
- c. Help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which plant communities developed; and
- d. Provide appropriate amounts and distributions of source habitats for riparian- or wetland-dependent species.

**Rationale:** Adequate amounts of healthy riparian and wetland vegetation are critical to functioning aquatic, riparian and wetland systems, which are necessary for riparian- and wetland-dependent species (listed in Appendix 6.) Some examples of cover types and structural stages important to riparian species are: cottonwood-willow/stand-initiation, shrub wetlands/open herbland, shrub wetlands/closed herbland, shrub wetland/open low-medium shrub, and shrub wetland/closed tall shrub. Some important environmental conditions related to riparian-dependent species include: maintenance and recruitment of large snags (see objective B-O31), mitigation of roads and road-associated effects (see standards B-S31 to B-S34), mitigation of human-associated activities (see objective B-O48), mitigation of livestock and associated impacts on native understory vegetation (see standards B-S31 and B-S32), restoration of hydrologic conditions to support large cottonwood/willow tree habitat (see objective B-O8), and restoration of riparian vegetation communities, such as riparian shrubs (see objective R-O24).

Past alterations to vegetation on Forest Service- and BLM-administered lands within the project area have resulted in riparian habitat conditions that are less than optimal for aquatic and riparian-dependent

species. Although the broad-scale data used for the ICBEMP are not detailed enough to quantify changes in riparian and wetland vegetation from historical to current, it is known that riparian ecosystem function, determined by the amount and type of vegetation cover, has decreased in most subbasins.

The intent of this objective is to ensure that adequate amounts of riparian and wetland vegetation are sustained or increased in the long term, basin-wide, and that further habitat degradation does not occur. In order to determine appropriate amounts of habitat, it may be necessary to assess riparian and wetland habitat and species requirements, comparing current to potential conditions. This determination should be made during EAWS or site-specific NEPA analysis.

**B-S31. Standard.** New management activities (subject to valid existing rights; see standard B-S34) within or affecting RCAs shall be conducted only if they are consistent with the RCA management objectives of maintaining or improving banks, shorelines, bottom configurations, amount and distribution of woody debris, thermal regulation, characteristic erosion rates, and amount and distribution of source habitats.

Watershed Condition Indicators (WCIs) shall be used to evaluate proposed activities and determine consistency with RCA management objectives. See the management intent and direction for WCIs for further detail.

**Rationale:** New management activities include those actions which require NEPA decision documents. Activities include, but are not limited to, hydropower projects, silvicultural practices, road and trail construction, fuel storage, herbicide and pesticide application, and recreation facilities.

**B-G42. Guideline.** NEPA planning and decision documents for projects within riparian conservation areas could specify best management practices (BMPs) required to maintain or achieve the objectives, and could include a discussion of the anticipated effectiveness of the BMPs.

**B-S32. Standard.** Existing land uses, facilities, and actions within or affecting RCAs shall be modified, discontinued, or relocated if they are not maintaining or improving banks, shorelines, bottom configurations, amount and distribution of woody debris, thermal regulation, characteristic erosion rates, and amount and distribution of source habitats (subject to valid existing rights).

Watershed Condition Indicators (WCIs) shall be used to evaluate existing land uses, facilities, and actions within or affecting RCAs and determine consistency with RCA management objectives. See the management intent and direction for WCIs for further detail.

**Rationale:** Existing land uses, facilities, and actions include but are not limited to: livestock grazing, existing dispersed and developed recreation facilities and practices, and road and trail maintenance, including sidecasting.

**B-S33. Standard.** During licensing or relicensing of hydroelectric projects, terms and conditions that achieve aquatic and RCA management objectives over the new license term shall be submitted to the Federal Energy Regulatory Commission.

**Rationale:** See Section 4[e] of the Federal Power Act for a description of the Forest Service and BLM's authority and responsibility to provide terms and conditions to FERC. Relicensing of hydropower projects should be consistent with this standard so long as on- and off-site mitigation, restoration, and enhancement are conducted to meet RCA management objectives.

**B-S34. Standard.** For those management activities conducted pursuant to valid existing rights that may pose risks to achievement of RCA management objectives, existing authorities shall be used to mitigate and/or require to the extent authorized design features that would contribute to the maintenance of banks, shorelines, bottom configurations, amount and distribution of woody debris, thermal regulation, characteristic erosion rates, and amount and distribution of source habitats.

**Rationale:** Land management agencies have limited authority to preclude certain activities (such as mining) in priority areas. However, they do have authority to require reasonable terms and conditions or mitigation measures to minimize the effects of some of these uses. Standard B-S34 requires the use of existing authorities to minimize the impacts of certain uses, over which the BLM and Forest Service have limited authority.

**B-S35. Standard.** Management activities and land uses in RCAs shall be implemented to attain proper functioning condition (BLM Technical Report 1737-9 [USDI/BLM 1993] and 1737-11 [USDI/BLM 1994]) as a first step to move habitat conditions of streams, riparian areas, or lakes and ponds toward achieving aquatic and RCA management objectives.

**Rationale:** Management practices such as grazing, recreation, fuels management and other forms of vegetation management are expected to be designed to provide for the health, form, and function of riparian systems. Determining proper functioning condition (PFC) is an interdisciplinary process.

Attainment of PFC assures that stream and riparian areas function well and are on an improving trend. Until PFC is attained, management priorities and options focus on reaching this threshold over time. The desired condition, supported by Watershed Condition Indicators (WCIs), lies between PFC and biological potential.

**NOTE: Standards B-S36, B-S37, B-S38 are activity-based (as opposed to outcome-based) standards that were developed specifically for wildfire suppression because wildfire suppression generally occurs under emergency situations.**

**B-S36. Standard.** Fire suppression strategies, practices, and actions in RCAs shall be designed to attain RCA management objectives, and to minimize disturbances of riparian ground cover and vegetation. Minimum impact suppression techniques (MIST) shall be used within RCAs unless safety to human life or property is an issue.

**Rationale:** Fire suppression strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression could perpetuate or be damaging to long-term ecosystem function or aquatic and riparian resources.

**B-S37. Standard.** Incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities shall be located outside of RCAs. If the only suitable location for such activities is within an RCA, an exemption may be granted following a review and recommendation by a resource advisor. The advisor should prescribe the location, use conditions, and rehabilitation requirements, with avoidance of adverse effects to terrestrial, aquatic, and riparian resources a primary goal. An interdisciplinary team shall be used to predetermine incident base, dipping, and helibase locations during pre-suppression planning.

**B-S38. Standard.** Delivery of chemical retardant, foam, or additives to, or discharge of gray water into, surface waters shall be prohibited. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor, when the action agency determines an escaped fire would cause more long-term damage to fish habitats than chemical delivery to surface waters.

### **RCA Delineation**

To meet aquatic and riparian objectives, RCAs need to be delineated considering ecological and geomorphic factors, which vary across the project area. Delineation of ecologically appropriate RCAs requires fine-scale application of appropriate criteria using a two-tier approach.

The **first tier** involves identification of ecological and geomorphic delineation criteria. This first tier analysis is done either through an EAWS or a programmatic planning analysis, whichever is the appropriate scale. This analysis is intended to provide the context needed to understand riparian area interactions and processes.

The **second tier** applies the criteria (or interim criteria) developed from the first tier analysis to specific areas on the ground in conjunction with proposed management activities.

Conceptually, the **first tier** analysis results in identification of ecologically appropriate RCA criteria by using existing information to characterize the extent, conditions, and trends of riparian areas within the analysis area. This analysis identifies dominant physical and biological features in the watershed that influence the riparian network, and addresses important biophysical functions and processes. The issues associated with the riparian system, including past, current, and potential future management emphases, are used to ascertain the rigor and depth of analysis needed. The resulting information is synthesized and interpreted using a process where potential criteria are examined and selected or eliminated based on their appropriateness to meet the overall intent of aquatic and riparian management objectives at the finer-scale.

For example: The characterization may identify that the geographic extent of riparian areas has declined in portions of the analysis area, and therefore the extent of existing riparian vegetation may not be a suitable criterion for identifying RCAs. Another issue might suggest there are important breeding and dispersal corridors for a riparian-dependent species, which could be an important criterion for identifying RCAs at finer scales. Summarizing the physical conditions of the analysis area may stratify valley bottom and stream type combinations into different classes with inherent channel stability and sideslope erosion properties.

The overall intent of the first tier analysis is to document relationships between key riparian processes and functions and ecological and/or geomorphic factors (such as shade and site potential tree height), which should help to appropriately identify RCAs. The Forest Service and BLM will initiate collaboration when developing ecologically appropriate RCA delineation criteria as described in Standard B-S40. Interim criteria will be used to delineate RCAs as described in standards B-S39(S2) and B-S39(S3) until the first tier analysis has been completed.

The **second tier** applies the RCA criteria (or interim criteria) to specific areas on the ground while designing and planning proposed management actions. The intent is that the associated site-specific NEPA analysis and decision would disclose how the criteria will be used to delineate RCAs on the ground and the degree to which they provide for riparian processes and functions and contribute to meeting aquatic and riparian management objectives. Any necessary, site-specific refinements of the criteria will also be documented in the NEPA analysis and decision document.

RCA criteria decisions will be subject to ESA consultation if they have the potential to affect listed species or their habitat. On-the-ground delineation of RCAs will be conducted by land management personnel with expertise in the identified riparian functions and processes and local site conditions.

**B-S39(S2). Standard for S2 Only.**

Prior to conducting or completing EAWS or programmatic planning processes including land use plan revision, the following interim RCA criteria shall apply:

*Rangeland perennial and intermittent streams*

Interim RCAs consist of the stream channel and the area on either side of the stream extending from the edges of the active channel to the extent of the floodprone width (Rosgen 1994).

*Forested perennial streams; and intermittent streams that support fish spawning and rearing*

Interim RCAs consist of the stream channel and the area on either side of the stream extending from the edges of the active channel to the top of the inner gorge, or to the outer edges of the floodprone width, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, whichever is greatest.

*Forested intermittent streams that do not support fish.* Interim RCAs consist of the stream and the area on either side of the stream extending from the edges of the active channel to the

top of the inner gorge, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, whichever is greatest.

*Ponds, lakes, reservoirs, and wetlands*

Interim RCAs consist of the body of water or wetland and the area from the edge of the wetland, pond, or lake to the outer edges of riparian vegetation, or to the extent of seasonally saturated soil, or to a distance equal to the height of one site-potential tree, whichever is greatest.

**B-S39(S3). Standard for S3 Only.**

Prior to conducting or completing EAWS or programmatic planning processes including land use plan revision, the following interim RCA criteria shall apply:

*Rangeland perennial and intermittent streams*

Interim RCAs consist of the stream channel and the area on either side of the stream extending from the edges of the active channel to the extent of the floodprone width (Rosgen 1994).

*Forested fish-bearing perennial streams*

Interim RCAs consist of the stream channel and the area on either side of the stream extending from the edges of the active channel to a distance equal to the height of two site-potential trees.

*Forested non-fish-bearing perennial streams*

Interim RCAs consist of the stream channel and the area on either side of the stream extending from the edges of the active channel to a distance equal to the height of one site-potential tree.

*Forested intermittent streams*

Interim RCAs consist of the stream and the area on either side of the stream extending from the edges of the active channel to a distance equal to the height of one-half site-potential tree on forested streams or to the extent of the riparian vegetation on non-forested streams.

*Ponds, lakes, reservoirs, and wetlands*

Interim RCAs consist of the body of water or wetland and the area from the edge of the wetland, pond, or lake to a distance equal to the height of one site-potential tree.

**B-S40. Standard.** During EAWS or through the appropriate programmatic planning processes (including land use plan revision) (tier one) interim RCA criteria shall be replaced with ecologically

appropriate criteria that are consistent with the RCA management intent and the attainment of RCA management objectives. This ecologically appropriate criteria shall be identified using scientific information in combination with local knowledge and information on riparian processes and functions, resource values, and risks.

RCA's shall be delineated on an appropriate hydrologic unit basis, not a stream reach basis (tier two). Rationale for final RCA delineation criteria shall be presented through the appropriate NEPA decision-making process.

**Rationale:** The intent is to replace or modify broad-scale interim RCA delineation criteria with locally defined criteria that would be consistent with the attainment of RCA objectives. Field units must revise the broad-scale interim RCA criteria either when they conduct EAWS or through appropriate programmatic planning processes, including land use plan revision. Although EAWS is not a decision process, it would provide information for ecologically appropriate criteria that would support site-specific NEPA decisions on RCA delineation. Administrative units should consider relevant scientific and local information, riparian processes and functions, resource values, risk, and source habitat for riparian-associated species when defining RCA characteristics.

**B-S41. Standard.** During land use plan revision, RCA's shall not be included in the suitable timber base used to calculate the allowable sale quantity.

### Sediment Delivery Influence Area

#### Description and Management Intent

The primary management intent of the sediment delivery influence area is to limit sediment entry and overland flow from management actions into the RCA. For example, when designing prescribed fire projects within the influence area, prescriptions should be designed to retain sufficient duff and ground cover to minimize soil movement.

**B-S42(S2). Standard for Alternative S2 Only.** Prior to conducting new management activities, an area influencing sediment delivery to RCA's along perennial and intermittent streams shall be identified, using the definition or process in Appendix 9. When management activities are conducted within the sediment delivery influence area, ground disturbance shall be minimized and sufficient ground cover shall be retained to limit sediment movement into the RCA to allow attainment of RCA objectives.

**Rationale:** The *Assessment of Ecosystem Components* identified hillslope steepness as an important biophysical principle which underlies a riparian management strategy. As side slopes adjacent to streams steepen, the likelihood of disturbance resulting in discernible instream effects increases. Standard B-S42(S2) addresses this principle and uses relationships developed in the *Assessment of Ecosystem Components*.

**B-S42(S3). Standard for Alternative S3 Only.** Prior to conducting new management activities, an area influencing sediment delivery to RCA's along intermittent streams shall be identified, using the definition or process in Appendix 9. When management activities are conducted within the sediment delivery influence area, ground disturbance shall be minimized and sufficient ground cover shall be retained to limit sediment movement into the RCA to allow attainment of RCA objectives.

**Rationale:** The *Assessment of Ecosystem Components* identified hillslope steepness as an important biophysical principle which underlies a riparian management strategy. As side slopes adjacent to streams steepen, the likelihood of disturbance resulting in discernible instream effects increases. Standard B-S42(S3) addresses this principle and uses relationships developed in the *Assessment of Ecosystem Components*. In Alternative S3, the sediment delivery influence area is limited to intermittent streams because, based on scientific literature, the narrower RCA width for intermittent streams under this alternative would be insufficient to trap sediment movement in steep country, making the identification of an additional sediment delivery area necessary.

### Watershed Condition Indicators (WCIs)

#### Description and Management Intent

Watershed condition indicators (WCI) are an integrated suite of aquatic (including a biological component), riparian (including riparian-associated terrestrial species), and hydrologic (including uplands) condition measures that are intended to be used at the watershed scale. They are intended to serve two primary purposes:

1. To assist in effectiveness monitoring—as measurable indicators of how effective management actions are in attaining broad-scale ICBEMP aquatic/riparian/hydrologic objectives. *This purpose is discussed further in the Monitoring Framework (Appendix 10).*

2. To indicate the current condition of a watershed and to help land managers design projects and make judgements about the appropriateness of management activities with respect to aquatic/riparian/hydrologic objectives. *This purpose is discussed in the following paragraphs and the accompanying management direction.*

WCIs provide context and decision support to determine whether combined actions would contribute to attainment of objectives at subwatershed and larger scales. The WCIs, including interim NMFS/USFWS matrices (see Appendix 9), should be used as a suite of integrated indicators. They should not be used individually as fixed targets toward which to manage or as specific thresholds from which to make “go/no go” project implementation decisions. However, they should be used to help design appropriate management actions or alter or mitigate proposed actions to move watersheds toward desired conditions. If certain indicators highlight a concern in a watershed, then NEPA analysis would disclose how proposed management actions would be designed to alleviate the concerns, and/or why the proposed action is needed to achieve aquatic/riparian/hydrologic objectives.

The WCI protocol and indicators are expected to be developed by the ICBEMP Implementation and Monitoring team in two to three years after the ROD for the ICBEMP EIS is signed. The ICBEMP protocol will be consistent with the Northwest Forest Plan WCI protocol; however, adjustments or additions to the Northwest Forest Plan indicators may be needed to reflect the range of conditions within the interior Columbia River Basin project area. Values will be assigned to channel, riparian (aquatic and terrestrial), and upland (aquatic and terrestrial) indicators at subregional scales based on relationships among key natural disturbance processes and biological, physical, and chemical characteristics of subwatersheds or watersheds. Local administrative units and inter-agency partners will participate in development of subregional indicator values relating to resource management objectives.

While WCIs are being developed, the intent is to use the NMFS/USFWS matrices of pathways and indicators (as refined locally) as interim indicators to evaluate project consistency with aquatic, riparian, and hydrologic objectives. (See Appendix 9.)

**B-O39. Objective.** Evaluate the effects of management on aquatic (including a biological component), riparian (including riparian-associated terrestrial species), and hydrologic (including uplands) condition through Watershed Condition Indicators (WCIs).

For aquatic and hydrologic conditions use the NMFS/USFWS matrices of pathways and indicators (see Appendix 9) as interim indicators until WCIs are developed. For terrestrial riparian species, until specific WCIs are developed, consider current levels and changes in quantity, quality, and distribution of: emergent wetland vegetation, wetland or riparian vegetation (grass, herbs, shrubs, and coniferous and deciduous trees), and wetland and riparian snags and downed wood; the composition of communities in terms of native and non-native vegetation; and the presence of roads and human disturbance.

**B-S43. Standard.** Watershed Condition Indicators (WCIs) shall be developed and refined at the watershed scale to illustrate the variability of watershed condition among watersheds or subwatersheds within a broader context. An interdisciplinary team of local experts shall establish this environmental baseline and evaluate the effectiveness of the aquatic/riparian/hydrologic component of the ICBEMP ecosystem management strategy over time.

The WCIs, in combination with other assessments and cumulative effects analyses, including NEPA, EAWS (where available), and Subbasin Review, shall be used to determine if proposed activities are consistent with and/or contribute toward achievement of the aquatic, riparian, and hydrologic objectives. Each step of the process, including any assumptions developed, shall be documented to illustrate how the intent of the broad-scale direction will be met at finer scales.

**Rationale:** WCIs are intended to be applied at the watershed scale and can provide context for site-specific NEPA analysis and decisions. Site-specific NEPA analysis (including required cumulative effects analysis) and decisions will address how use of the WCIs has influenced project design and implementation strategy.

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***WCIs are an integrated suite of measures used to determine how effective management actions are and to help land managers design projects.***

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**B-S44. Standard.** While WCIs are being developed, the “matrix of pathways and indicators” (as refined locally by local administrative units and interagency partners) in combination with cumulative effects analysis, NEPA, EAWS (where available), or Subbasin Review, shall be used to help establish an environmental baseline of aquatic resource and watershed

conditions. Effects of actions shall be evaluated against this baseline to determine consistency with aquatic, riparian, and hydrologic objectives in the ICBEMP ecosystem management strategy. Actions which could negatively affect fundamental physical and ecological processes within a watershed in the long term (more than 10 years) shall be redesigned to be consistent with the aquatic, riparian, and hydrologic objectives.

**Rationale:** Interim indicators are intended to be applied at the watershed scale and can provide context for site-specific NEPA analysis and decisions. Site-specific NEPA analysis (including required cumulative effects analysis) and decisions will address how use of the interim indicators has influenced project design and implementation strategy.

**B-G43. Guideline.** As part of the suite of WCIs, consider including qualitative and quantitative watershed disturbance indicators (natural and management) for uplands and riparian areas to provide early indication of potential watershed cumulative effects and potential restoration opportunities.

## Water Quality and Hydrologic Processes

### Description and Management Intent

The Clean Water Act (CWA) mandates the Bureau of Land Management (BLM) and the Forest Service, as federal land management agencies, to protect and restore the quality of public waters under their jurisdictions. Although the Environmental Protection Agency (EPA) has ultimate responsibility for administering the Clean Water Act, states and tribes have primary responsibility for implementing many of its provisions. Water quality standards have been established by states and tribes, and approved by the EPA, to ensure beneficial uses are supported. Federal land management agencies are designated by the states to assist in Clean Water Act implementation.

Federal land management agency obligation under the Clean Water Act is to protect and maintain water quality where it meets or exceeds EPA-established or EPA-approved state and tribal water quality standards. This obligation includes compliance with state anti-degradation, High Quality Waters, and Outstanding Resource Waters policies. The application of Best Management Practices (BMPs)—including land allocations, prescriptions, mitigation measures, and planning requirements—is the main mechanism (section 319) for achieving this obligation.

Water bodies having impaired water quality are in part identified on the respective states' 303(d) lists. A protocol for addressing restoration and maintenance of 303(d) waters on BLM- and Forest Service-administered lands was developed collaboratively and adopted for the area included in the ICBEMP project area (USDA Forest Service and USDI BLM 1999). Application of this 303(d) protocol provides reasonable assurance that listed and threatened waters, as well as waterbodies not meeting water quality standards, will be addressed in a consistent manner at an appropriate scale and level of technical rigor.

**B-O40. Objective.** Maintain water quality and hydrologic processes necessary to support beneficial uses including healthy riparian, aquatic, and wetland ecosystems. Water quality and hydrologic processes should be within the range of variability representative of the inherent capability of the watershed area that supports beneficial uses.

**Rationale:** The processes that determine water quality condition are not static but vary within a stream system through space and time. Ranges of conditions are difficult to define because the variation is influenced by many factors, including climate, natural and human-caused disturbances within the watershed, and the natural capability determined by the specific geomorphic characteristics of the stream and surrounding watershed. The intent is to manage the watershed toward water quality frequencies and distributions that fully support beneficial uses and that are more consistent with natural patterns characteristic of geomorphically similar watershed areas. Until these ranges are determined and water quality standards are modified to reflect these ranges, existing water quality standards are the minimum legal limit for water quality.

**B-S45. Standard.** The application of the 303(d) protocol at watershed or subbasin scale shall be scheduled as part of Forest Service and BLM annual planning processes, and shall be implemented to assure that all 303(d)-listed water bodies in a watershed and/or subbasin that are affected by activities on Forest Service- and BLM-administered lands are addressed in a timely manner. The schedule shall consider states' and/or tribes' priority lists and schedules for TMDL development, results of Subbasin Review, and/or EAWS where available, and schedules and restoration plans resulting from implementation of the Clean Water Action Plan (CWAP).

**Rationale:** The Forest Service and BLM have established a goal of addressing all listed 303(d) water bodies within a five-year period. To realize this goal, it will be necessary to systematically schedule and apply the protocol to an entire drainage (either watershed or subbasin scale). States have developed total maximum daily load (TMDL) priorities and schedules on a watershed or subbasin scale while providing flexibility to complete smaller-scale TMDLs on portions of the watershed or subbasin within the schedule for the watershed or subbasin. The purpose of this standard is to assure that restoration of 303(d)-listed water bodies on Forest Service- and BLM-administered lands is considered in a broader context than provided by a project scale. It also should assure that appropriate coordination and collaboration occurs with other efforts to restore water quality on all lands within an entire drainage. The application of the protocol in this context will provide key information to states and tribes for incorporation into the development of the overall TMDL for an entire drainage.

The protocol includes three key components: goals, strategy, and decision framework. The goal for addressing 303(d) waterbodies states a five-year time line (approximately the year 2005) while accommodating state and tribal schedules for development of TMDLs and Clean Water Action Plan implementation (Unified Assessments and Restoration Strategies). The intent of this goal is to be proactive in restoring 303(d)-listed waterbodies on Forest Service- and BLM-administered lands as well as to collaborate with other ongoing efforts to restore water quality on all lands. It also provides information for the federal portion of the TMDL to states and tribes for incorporation into the development of the overall TMDL that includes all ownerships. Although TMDLs and CWAP implementation are generally planned for a subbasin, portions of the plans will be specific to smaller areas within the subbasin such as a watershed or stream reach to allow flexibility to proceed with appropriate activities.

The 303(d) protocol provides a consistent approach for addressing Clean Water Act responsibilities on Forest Service- and BLM-administered lands. Application of the protocol provides assurance that federal management activities in 303(d) listed water bodies will contribute to the maintenance or restoration of water quality. The decision framework is a four-step process that may result in development of a water quality restoration plan. The assessment supports development of a water quality restoration plan and is independent of scale, but guidance is provided to

assist in selection of the scale(s) most likely to effectively develop an appropriate solution. It provides the mechanism to proceed with federal land management in listed water bodies prior to state approval or development of a TMDL. Results from application of the protocol will also support state development of TMDLs. Also, there may be instances when federal land management agencies have opportunities or need to proceed with water quality restoration activities in subbasins under time frames that are ahead of 303(d) priorities, state TMDL schedules, or priorities identified in State Unified Watershed Assessments. Under these circumstances the resulting WQRP would include the appropriate elements to facilitate future analyses and planning processes.

**B-S46. Standard.** Apply the 303(d) protocol where any land management activity has the potential to affect the parameter(s) for which the waterbody was listed, or where water quality standards are not being met because of land management activities on BLM- or Forest Service-administered lands. Land management activity includes new, existing, and ongoing activities. Any resulting water quality restoration plans shall be implemented as part of or prior to proceeding with the activity.

**Rationale:** Application of the protocol for all impaired waters on Forest Service- and BLM-administered lands will take several years to complete. In the interim, using the protocol on a project-driven basis will provide assurance that new activities, or any existing activity where new information shows water quality is adversely affected, will contribute to the restoration of water quality.

This standard is also intended to prevent further degradation where water quality is currently not meeting EPA-established or EPA-approved state or tribal water quality standards and to restore water quality to support beneficial uses. Proactively maintaining and/or restoring water quality should prevent listing and will facilitate restoration of water quality in a timely and efficient manner, in the long term.

**B-O41. Objective.** In subbasins (or within smaller watershed areas) with mixed ownership, use the 303(d) protocol on federal lands, and provide the opportunity to use the protocol to address water quality problems collaboratively with non-federal landowners, watershed councils, state agencies, tribes, Natural Resource Conservation Service, and other interested parties. Strive to develop water quality restoration plans that apply to an entire watershed or subbasin.

**Rationale:** To best address and restore water quality where listed water bodies encompass mixed ownership geography, development of water quality restoration plans should be a collaborative effort among interested parties. Federal agencies should be a party to development of any WQRPs or programs that restore impaired water bodies where federally administered lands are involved. Unified efforts to address water quality on a total watershed basis are also consistent with goals and objectives specified in the Clean Water Action Plan (CWAP).

**B-O42. Objective.** Use existing Memoranda of Understanding (MOUs) with state water quality agencies to develop partnerships that include other federal, state, county, and tribal organizations, watershed councils, private citizens, and non-federal land owners, to maximize the benefits of existing efforts for water quality protection and restoration. Also see objective R-O33 under Restoration Direction.

**Rationale:** Other federal and state agencies, tribes, counties, and interested stakeholders within the project area have developed or are in the process of developing water quality restoration plans. Many of these efforts are striving to accomplish similar outcomes, and the greatest benefits and returns on investments can be obtained where mutual priorities or opportunities can provide a pool of resources to more effectively implement management activities.

## **Terrestrial and Aquatic Species**

### **Viability and Harvestability**

#### **Description and Management Intent**

The following section contains management direction for three specific areas for terrestrial and aquatic species habitats:

1. Providing for conservation of basin-wide species of concern;
2. Providing quality habitat to support harvestability, which is important to both tribes and states; and
3. Providing for terrestrial and aquatic species habitats which are not addressed by source habitats or with other direction (such as species with special habitat needs). Additional management direction that relates to species habitats is also found in other sections.

One intent of the direction in this section is to consider and provide well-connected networks of habitat for productive and diverse populations and communities of terrestrial and aquatic species during planning for management actions. The intent is not for management actions to optimize or maximize habitat for a particular species or group of species (although it doesn't prohibit doing so). It is neither necessary nor practicable to consider every species during every analysis. Rather, those species or groups of species whose habitat may be substantially affected by a proposed activity should be considered. ("Substantially affected" means having greater than a "slight effect," and, more often, affecting the productivity or distribution of a population or community.)

Another intent of this section is to provide habitat capable of supporting harvestable resources. Harvestability is a combination of animal or plant availability and access to harvest them. An issue common to the four states in the project area is harvestability of fish and game species, such as trout, elk, and mule deer. Hunting, fishing or viewing these and other species is important to many people in the project area. The BLM and Forest Service, while not directly responsible for management of species populations, are responsible for the habitat upon which these species depend, and the agencies' management actions can influence harvestability. The Forest Service and BLM decision makers for the ICBEMP have committed to providing habitat capable of supporting harvestable resources.

One of the primary issues common to nearly all 22 potentially affected tribes is harvestability of important aquatic and terrestrial species, such as salmon, mule deer, and camas (see Chapter 2 for more detail). These species, besides being associated with a number of the tribes' off-reservation reserved treaty rights, are integral to the culture of many of the tribes within the project area. At issue is the availability of sufficient numbers of these species (aquatic, animal, and plant) for contribution to the culture and the meaningful exercise of the reserved rights, where they exist.

For some species associated with the rights and interests of tribes, sufficient habitat is or can be made available for harvestable populations in 10 to 15 years. However, in the case of anadromous fish, habitat accounts for only a portion of one of four factors related to recovery and harvestability. The other factors (harvest, hydropower, habitat on lands not administered by the Forest Service or BLM, and hatcheries) are outside the scope of the EIS and outside the authority of the Forest Service and BLM decision makers. Therefore, the intent is to maintain

or restore quality habitat on Forest Service- and BLM-administered lands. This habitat will be available to support species to progress to harvestability in 50 years. Addressing other limiting factors which influence recovery and harvestability, such as effects of hydropower systems, could shorten the time frame for achieving this objective. Chapter 4 describes the ability of each alternative to address viability of anadromous fish and establish the trend toward meeting the management intent of harvestability over time. Progress toward achieving this intent will be measured through monitoring.

Direction to address this management intent is provided throughout the management strategy and specifically for harvestability in this section. Each of the affected tribes has unique rights, interests, and opportunities which can best be discussed at finer scales with land managers, rather than at the broad scale. Therefore, management direction tends to be process oriented, focusing on the expected outcome of implementation.

**B-O43. Objective.** Provide habitat capable of: (1) supporting viable populations of plant and animal species, (2) contributing to recovery of listed species, and (3) supporting productive and diverse plant and animal populations and communities to meet social needs.

**Rationale:** Consideration of plant and animal species habitat (for example, riparian areas and wetlands; alpine; and upland forest, shrub, and grasslands) is important in design and evaluation of management actions. Important elements include: amount, quality, and distribution of these habitats including their fragmentation, juxtaposition to other habitats, and connectedness; influence of human disturbance and roads; and ecosystem processes that shape habitat.

Rare plant communities and habitat for plants, animals, and fishes of concern (that is, endemic, rare, or disjunct species, and species that occur at the edge of their ranges) should be considered during appropriate step-down processes (programmatic planning processes, Subbasin Review, EAWS, and/or site-specific NEPA analysis). Species and communities of concern vary over time and by area. Managers should determine the appropriate and reasonable analysis levels by which to address them, given the risks and opportunities to affect their habitat.

**B-G44. Guideline.** Consider developing an interim species response matrix that includes documented

(from literature searches) responses of the species to management activities or natural phenomena. Consider using this information to determine management activities for which mitigation measures should be recommended or are needed.

**B-O44. Objective.** Maintain and restore aquatic and terrestrial habitat quality and quantity to support harvestable plants, fisheries, and aquatic and terrestrial species.

**Rationale:** The Forest Service and BLM manage habitats that are important to many species. Through management actions, habitat for harvestable plant and animal species can be positively or negatively affected. It is important that potential effects on habitat to support harvestable levels of animal and plant species be evaluated during planning processes.

Harvestability is a combination of animal or plant availability and access to harvest them. Managing human access is one of the more effective tools that the Forest Service and BLM have to protect a species and its habitat. However, this tool must be used carefully when considering harvestability of a species. Restrictions on access may protect a species and its habitat but may also reduce harvestability by making animals or plants harder to take or gather.

Management of animal species populations is often the responsibility of other agencies (such as states or tribes) whose management actions can have substantial effects on species populations. For these species, the Forest Service and BLM can provide habitat, but they have less control over a species' population response to that habitat. Management of plant species populations is more commonly the responsibility of the Forest Service and BLM, which have a greater opportunity to positively influence harvestability of these species.

Habitat condition trends for terrestrial and aquatic species can be measured, for the most part, in terms of habitat condition on lands administered by the Forest Service and BLM. Land use plans generally include habitat condition indicators for important aquatic and terrestrial species (such as fishes, elk, deer). Habitat condition also is the best measure of Forest Service and BLM ability to maintain or restore harvestability for most plants including widely distributed plant species such as huckleberries and mushrooms. For some very rare species (such as plants restricted to only a few sites), it may be necessary to measure actual population numbers to prevent overharvest.

**B-S47. Standard.** During EAWS or Subbasin Review, or prior to project implementation, federally recognized tribes shall be consulted to: (1) invite participation, (2) solicit data and information useful in the analysis/review, (3) identify if resources or species of significance to the tribe(s) are present, (4) characterize these resources or species using available information, (5) solicit tribally identified priorities and possible management and monitoring opportunities or indicators, and (6) use this information to provide context for finer scale analysis as well as to inform planning and decision-making processes.

**Rationale:** Land management agencies are responsible for the habitats upon which resources and species important to the tribes depend. In order to provide habitat capable of providing harvestable resources or species, the managers must understand what and where these resources are and how they relate and contribute to the ecosystem and landscape dynamics. As managers of their own land and natural resources, American Indian tribes may have data, information, or expertise that could be useful in informing agency planning and decision-making processes.

**B-O45. Objective.** Recognize native plant communities as traditional resources that are important to tribes and as an essential component to treaty-reserved gathering rights.

**B-S48. Standard.** Affected tribes shall be consulted and worked with to identify opportunities to restore and maintain native plant communities that are of interest to tribes. Where tribal interest is indicated, cooperative programs for restoration and/or maintenance of these species shall be established.

**B-S49. Standard.** As part of site-specific NEPA analysis, affected federally recognized tribes shall be consulted to: (1) identify resources or species important to tribal rights and/or interests, (2) assess effects of the proposed action(s) on these resources and/or species, and (3) if it is determined that the project may negatively affect the continued harvestability of these resources or species of significance to tribes, then mitigate accordingly.

**Rationale:** Land management agencies are responsible for the habitats upon which resources and species important to the tribes depend. In order to provide habitats capable of supporting harvestable resources or species, agencies must understand what and where these resources are and how they might be affected by proposed management actions.

See Appendix 10 and the Subbasin Review Guide for implementation guidance on tribal collaboration and

examples/possible questions to help focus discussions. Also, a list of culturally significant plant species is included in Appendix 8. This list is meant to serve as a starting point for collaborative discussion with tribes, because the species listed may not occur in all areas or be used by all tribes. See also the scientific assessment of big game species as they relate to tribes (Lehmkuhl and Kie 1999).

**B-O46. Objectives.** Special habitat components or features that contribute to the viability of species should be maintained and, where needed, restored. These features include but are not limited to caves, mines, cliffs, talus, or burrows.

**Rationale:** The specific habitats or elements described here were identified in the *Assessment of Ecosystem Components* (Quigley and Arbelbide 1997) and in *Source Habitats* (Wisdom et al. in press) as critical to long-term conservation of a variety of species. (For species list, see Appendix 6).

**B-G45. Guideline.** Contingent on human safety concerns, consider managing human access and minimizing potential disturbances to protect caves, old mines, old buildings, bridges, and other sites being used by bats.

**B-S50. Standard.** When planning management activities, determine if there could be adverse effects on special habitat features (caves, mines, cliffs, talus, or burrows). Discuss and minimize or mitigate effects.

**Rationale:** The assumption is that the special habitat features mentioned in this standard warrant protection because disturbance factors, cost, and safety considerations often preclude determining presence of species (such as bats in roosts or hibernacula) that use these features. Development of protective measures for these sites must include consideration of effects from vegetation management, access management, and human disturbance. The specific habitats or elements were identified in the *Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin* (Wisdom et al. in press, Vol. 3, Appendix 1, Table 2) as critical to long-term conservation of a variety of species. This information can be used in evaluating effects during Subbasin Review, EAWS, and site-specific NEPA analysis.

Other special habitat components, such as snags, coarse woody debris, and riparian shrubs, are covered under other objectives and/or standards. This standard is intended to address those special habitat components without other specific direction.

**B-S51. Standard.** The risks and opportunities associated with conservation of rare plant communities and habitat for plant, animal, and fish species of concern shall be addressed through the appropriate step-down processes (programmatic planning processes, Subbasin Review, EAWS, or site-specific NEPA analysis). (See Appendix 6 for the list of species.)

**Rationale:** *Species of concern* can be identified from many sources during the appropriate step-down processes. Examples include: species listed under the Endangered Species Act, Forest Service and BLM sensitive species lists, species ranked as G1BG3 or nonvascular plants ranked as S1BS3 by the network of State Natural Heritage programs, broad-scale species listed in Volume 1, Table 1 of Wisdom et al. (in press), species listed in Table 2 in Croft et al. (in press), and plant communities ranked G1BG3 by the network of State Natural Heritage programs.

Not all the species need to be considered in any one step-down process. The appropriate and reasonable scope and scale of analysis will depend on the species of concern and the magnitude of risks and opportunities to affect their habitat. This determination may be based on existing habitat data and professional knowledge of the species.

Species listed under the ESA or classified as sensitive species through Forest Service or BLM processes will continue to be addressed through established agency policy (see Appendix 6).

**B-G46. Guideline.** Local administrative units are encouraged to develop a list of plant, animal, and fish species of concern and rare plant communities that are likely to occur within the unit.

**B-S52. Standard.** For projects or activities that include application of insecticides or rodenticides, potential effects on non-target species shall be evaluated and either minimized or mitigated.

**Rationale:** Insecticides and rodenticides can affect non-target species through bioaccumulation of the pesticide or direct mortality. Adverse effects on non-target species can seriously reduce the overall benefits from use of insecticides or rodenticides.

**B-O47. Objective.** Improve the conservation and recovery of vascular and non-vascular plant species of concern that have wide distribution by developing conservation strategies (see the list of species in Appendix 6). The priority for development of the conservation strategies should be based on broad-scale risk. A conservation strategy would include the entire range of a species and should be developed

collaboratively by all affected agencies and administrative units.

**Rationale:** Conservation strategies for species of concern should be developed by a group of local experts for each region in which the species occurs. This will aid conservation and recovery of these widely distributed species. A species of concern has a wide distribution if it occurs in more than one RAC/PAC and/or in two or more administrative units, and are listed as threatened or endangered, classified as sensitive species by the Forest Service or BLM, or ranked as G1-G3 by the network of State Natural Heritage programs. Currently there are approximately 113 species which meet this definition (see Appendix 6); therefore, it is anticipated that it will take some time to develop strategies for all these species. Two considerations for setting priorities for development of conservation strategies should be:

1. species that are at most risk; and
2. species that occur on the greatest number of administrative units. Regularly monitoring the State Natural Heritage program databases for changes in species' rankings will assist in prioritization.

**B-O48. Objective.** Reduce the negative effects of human disturbance on species through assessment of risks and opportunities in the appropriate step-down process (programmatic planning processes, Subbasin Review, EAWS, or site-specific NEPA analysis).

**Rationale:** Disturbance by humans can have adverse effects on a wide range of species (Wisdom et al. in press). Some disturbance is inevitable and acceptable with human use of BLM- and Forest Service- administered lands. However, there are often ways to reduce disturbance of species and continue to allow people to use these lands. The potential to reduce human disturbance while providing for appropriate human use should be evaluated during the step-down processes. If opportunities are identified through Subbasin Review or EAWS, then they should be considered in site-specific NEPA for implementation. (NOTE: Also see Road Management Objectives, Standards, and Guidelines earlier in Base Level Direction.)

## Wide-ranging Carnivores

### Description and Management Intent

Populations of these species have been reduced from historical levels. Two of the species, gray wolf and grizzly bear, have been listed under the Endangered

Species Act and another, the lynx, is proposed for listing. Deterrents to the recovery of these species include human disturbance (including roads), and loss or isolation of habitat. The intent of this section is to provide broad-scale management direction for wide-ranging carnivores (lynx, wolverine, grizzly bear, and gray wolf). These species are considered wide-ranging because their territories cover great distances (often more than 50 miles).

Areas containing moderate to high abundance of source habitat for wide-ranging carnivores and low road densities were identified by the Science Advisory Group in *Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin* (Wisdom et al., in press); see Map 2-11b in Chapter 2 of this EIS. These areas are important in that they presumably would have the highest potential to support persistent populations. They could serve as “building blocks” from which an overall network of habitats for wide-ranging carnivores could be developed.

**B-O49. Objective.** Coordinate across multiple jurisdiction boundaries to develop broad-scale connectivity/linkages of wide-ranging carnivore habitat.

**Rationale:** Use the areas shown on Map 2-11b as building blocks from which to build connectivity. Habitat for wide-ranging carnivores cross multiple jurisdictional boundaries throughout the project area. Isolation of these habitats limits increases in species populations. Ensuring that wide-ranging carnivore habitats are linked across multi-jurisdictional boundaries can help prevent this isolation from occurring.

Providing such habitat connectivity requires multi-jurisdictional coordination. The purpose of this objective is to clarify that the Forest Service and BLM managers shall take the lead in coordinating efforts to provide for broad-scale connectivity of habitat for wide-ranging carnivores. This should include identifying the factors causing habitat isolation and coordinating actions to reverse the trend. Progress toward establishing broad-scale connectivity should be evident in ten years.

**B-O50. Objective.** Minimize isolation of wide-ranging carnivore populations at the local level using existing planning processes and coordinating across administrative boundaries.

**Rationale:** Objective B-O49 addresses habitat connectivity at the broad scale, but it is important to minimize isolation at finer scales. Stepping down broad-scale direction through coordination at subbasin and finer scales will complement efforts made under objective B-O49.

**B-S53. Standard.** As part of Subbasin Review, identify and map important wide-ranging carnivore areas, as well as existing and potential dispersal corridors for wide-ranging carnivores.

**Rationale:** Areas important to wide-ranging carnivores at subbasin and finer scales can be identified through habitat characteristics, documented sightings, and professional judgement. Information in *Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin* (Wisdom et al. in press) will be helpful in identifying these areas. See Map 2-11b for areas with high abundance of source habitat for wide-ranging carnivores and low road densities, mapped at the broad scale.

**B-O51. Objective.** Minimize or mitigate negative effects on wide-ranging carnivores and their prey during the design, development, and management of recreation facilities and other management activities, including snowmobile areas and trails.

**B-S54. Standard.** When planning for site-specific activities within areas identified as important to wide-ranging carnivores, documentation in NEPA analyses (EAs or EISs) should include the predicted effects of these activities on source habitat for these carnivores and their prey species at the subbasin level.

## **Aquatic and Terrestrial Threatened, Endangered, Proposed Species**

### **Description and Management Intent**

The Forest Service and BLM have legal responsibilities and policy requirements to provide habitat for threatened, endangered, and proposed species. Meeting these responsibilities requires maintenance of high quality habitat and restoration of degraded habitats necessary for the recovery of these species.

Aquatic and terrestrial threatened, endangered, or proposed species areas include both occupied habitat and designated critical habitat for federally listed threatened, endangered, or proposed species within the ICBEMP project area. The management intent is to protect and restore habitats for listed or proposed species and to contribute to recovery. Table 2-24 (in Chapter 2) and Appendix 6 show a current list of threatened, endangered, proposed, and candidate species in the project area.

Since a large portion of the project area is occupied by listed or proposed species or is designated critical habitat, and since a large portion of the project area is

in need of terrestrial habitat restoration, watershed restoration, and restoration of succession/disturbance regimes, potential conflicts may exist between short-term protection of listed or proposed species habitats and long-term recovery and resiliency of ecosystems that they inhabit. The hierarchical step-down analysis direction presented in the Step-Down section should aid land managers in strategically identifying risk and opportunities for conservation and restoration of listed species habitats while implementing approved recovery plans and meeting resource objectives and legal requirements. The Forest Service and BLM will continue to consult with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service on agency decisions that may affect listed species or their habitat.

Acceptable levels and types of risk are expected to be determined at an appropriate level through the step-down process and are intended to be consistent with aquatic and riparian objectives, base level, A1, A2, and restoration direction. Long-term negative effects are unacceptable. Risky, experimental actions would be an exception in listed and proposed species habitats and would be limited in scope and intensity. If any proposed activity were determined to have potential negative impacts on listed or proposed species or their habitat, Ecosystem Analysis at the Watershed Scale (EAWS) would be required to further provide context for agency decisions (see Standard B-S5[S2]). If, after incorporation of EAWS information into site-specific activity planning, the effect on listed or proposed species and their habitats would still be adverse in the short-term, then NEPA and consultation documents would clearly describe the short-term risk and hazard and long-term benefits of the activity, including a discussion of why other alternatives would not provide for long-term recovery of the listed or proposed species.

The following management direction for listed and proposed species would take precedence over ICBEMP base level direction, restoration direction, and less restrictive direction in land use plans (see the Hierarchy of Management Direction section, earlier in this chapter).

**B-O52. Objective.** Contribute to recovery of federally listed or proposed species (or subspecies or populations) across their ranges by maintaining and restoring habitat quality, quantity, and effectiveness.

**B-O53. Objective.** Balance the need for restorative actions to address long-term threats to listed and proposed species with the short-term need to protect listed and proposed species and their habitats.

**Rationale:** Improving the sustainability of a species' habitat is advantageous for its long-term recovery. This can involve repatterning vegetation to cover types and structural stages that are more consistent with the landform, climate, biological and physical characteristics of the ecosystem. At times, efforts to improve sustainability of habitat may pose a short-term risk to individual members of a listed species or their habitat. It is important to balance the short-term risk to individuals or the potential loss of habitat against the long-term benefits to the species as a whole. Generally, if an action is determined to have a "may affect, but not likely to adversely affect" determination, then the risk is acceptable. In some cases, an action may be acceptable if it is determined to have a short-term "may affect, likely to adversely affect" where the adverse effects are limited to the short-term loss of individuals or their habitat. In these cases, through consultation with the USFWS or NMFS it may be determined that the action is not likely to jeopardize the species in the short term, and that the action may actually benefit the species in the long term.

**B-S55. Standard.** Relevant management activities shall be designed and implemented to be consistent with approved recovery plans, conservation strategies, and other appropriate reports.

**Rationale:** Some federally listed species have approved recovery plans (see Table 1 in Appendix 6). These recovery plans identify specific recovery actions, some of which are oriented toward improving watershed and habitat condition. *Relevant* signifies that this standard would not apply to management activities that would not affect a listed species that has an approved recovery plan or conservation strategy. An example of *management activities* is recommended recovery tasks for Forest Service- and BLM-administered lands identified in recovery plans. *Other appropriate reports* (such as the Interagency Grizzly Bear Committee Task Report) include Forest Service or BLM direction that addresses conservation of a listed species.

**B-O54. Objective.** Consult with and seek the participation of affected American Indian tribes, to the extent practicable, when actions planned under the Endangered Species Act have the potential to adversely affect tribal trust resources, the exercise of tribal rights, or Indian land. Implement the associated Joint Secretarial Order #3206, June 5, 1997.

## Social–Economic–Tribal Component

### Description and Management

#### Intent: Overall

The socio-economic-tribal component of the ecosystem management strategy is designed to support the economic and social needs of people, cultures, and communities of the interior Columbia Basin, and to provide for sustainable levels of products and services from lands administered by the Forest Service and BLM within the capabilities of the ecosystem. Reservation communities are also some of the most economically depressed areas in the United States (Bureau of Labor Statistics, American Indian Labor Force, January 1991). Tribes and tribal communities depend on Forest Service- and BLM-administered lands for economic, cultural, subsistence, religious, and treaty purposes. The culture, as well as the rights and interests of American Indian people, are rooted in these lands, which are their traditional homelands. Tribal teachings are based upon understanding the relationship between themselves as a people, and the land and its resources. While these values cannot be quantified in an economic context, tribal economic participation is an important consideration in the management of these lands. Major areas of focus for this component include the following:

1. Recognition that Forest Service- and BLM-administered land will continue to be managed in accordance with the management direction in land use plans developed locally, through a public process, unless specifically superseded by ICBEMP direction.
2. Identification of areas or communities thought most economically affected by changing land uses on Forest Service- and BLM-administered lands.
3. Management direction that emphasizes the production of commercial products or services from Forest Service- or BLM-administered lands within the scope of achieving project ecological goals, especially in defined tribal areas and areas considered economically affected by changing land uses on Forest Service- and BLM-administered lands.
4. Methods to enable local and tribal communities to benefit from jobs generated by ecosystem restoration and other land management activities on Forest Service- and BLM-administered lands.
5. Methods for the Forest Service and BLM to contribute to local and tribal economic adjustment and development efforts.
6. Recognition that success in achieving the social and ecological goals of ecosystem management depends on effective collaboration.

7. Recognition that roads will be managed to reduce negative environmental effects, and that access provided by a well-managed road system delivers many benefits to society.
8. Suggestions for new policy and/or legislative initiatives can help the Forest Service, BLM, and other agencies be more responsive to the social and economic needs of tribal and rural communities.

Objectives, standards, and guidelines found in other base level sections related to landscape dynamics, terrestrial, and aquatic/riparian/hydrologic resources have direct or indirect relevance to the breadth of social, economic, and tribal concerns and interests. Such direction is intended to be part of the social-economic-tribal component. Direction found in this section is specific to the support of communities and tribes through products, services, contracts, and particular tribal aspects not addressed in other sections.

### Products and Services from Public Lands

#### Description and Management Intent

The following objective was developed to encourage and support peoples' use of public land resources within the capacity of ecosystems to provide these products and services at a sustainable level, and consistent with other ecological and restoration goals. The intent is to support economic activity for local and tribal communities, particularly those that are isolated and economically specialized, which will help maintain their viability as they move toward achieving their long-range goals of economic development and broader economic diversification.

**B-O55. Objective.** Derive social and economic benefits, promote commercial activity, and foster demand for labor and capital formation through producing a variety of goods and services from Forest Service- and BLM-administered lands according to land management plan allocations and management direction.

**Rationale:** Goods and services, both market (priced) and non-market (not priced) can be used to generate economic activity and fulfill social and cultural needs. This objective shows an intent to continue to supply a mix of economic benefits, including commodity products, as part of achieving ecological goals. Where agency land use plans are not superseded by ICBEMP and other applicable direction, local units will be able to continue to implement the management direction in their plans with regard to production of goods and services.

## Support Economic and Social Needs of Communities and Cultures

### *Description and Management Intent*

The following objectives and standards are designed to promote agency support for, and collaboration with, local and tribal communities when developing methods to support their social and economic needs. The intent is to integrate the needs of local and tribal communities more thoroughly into agency decision-making and management activities. Methods may range from targeting contracts for the local workforce to a greater coordination and streamlining of agency planning efforts.

**B-O56. Objective.** Target contracts for services and sale of products from federal lands to local firms and individuals as permitted by existing authorities and where it will help achieve management objectives. Design product sales and service contracts to promote local participation of vendors and purchasers by offering sales and contracts that are diverse in size, type, term length, and seasonal distribution.

**Rationale:** The participation of the local workforce in management activities on nearby Forest Service- and BLM-administered lands is important to many rural community economies. In addition to providing local jobs and income, such participation supports traditional occupations and cultures, and gives communities a stronger sense of involvement with neighboring Forest Service- and BLM-administered lands.

**B-G47. Guideline.** Consider applying information learned from Stewardship End Result Contracting Demonstration Projects (Section 347, Fiscal Year 1999 Appropriations Bill), which authorized contracts with private individuals and entities to perform services in exchange for the market value of commercial forest products. Services may include: (1) road and trail maintenance or obliteration to restore or maintain water quality, soil productivity, habitat for wildlife and fisheries, or other resource values; (2) setting prescribed fires to improve the composition, structure, condition, and/or health of stands or to improve wildlife habitat; (3) non-commercial harvest of trees or other activities to promote healthy forest stands, reduce fire hazards, or achieve other non-commercial objectives; (4) watershed restoration and maintenance; (5) restoration and maintenance of wildlife and fish habitat; and (6) control of noxious and exotic weeds and reestablishing native plant species.

**Rationale:** The stewardship contracting authority is a good opportunity to showcase what can happen when the Forest Service and BLM are able to combine

procurement and timber sale contracts. This approach will give the agencies the latitude to offset restoration costs through the value of forest products harvested. The appropriations language is flexible and allows the agencies to be innovative in implementing projects for a small number of demonstration projects.

**B-S56. Standard.** Ensure projects and contracts administered by the Forest Service or BLM use the authorities and requirements that provide for greater participation of tribal businesses/entities both on and off-reservation.

**Rationale:** See the Self Governance Act of 1994; Indian set-aside and other minority business requirements for the Small Business Association; the Indian Education and Self Determination Act of 1975, as amended (PL 93-638); Public Law 94-148, Buy Indian Act, Rural Community Assistance Act, and other applicable portions of the Farm Bill; and other laws as discussed in Appendix 8.

### **B-O57(S2). Objective for Alternative S2 Only.**

Cooperate with federally recognized tribes and tribal communities in their efforts to enhance reservation economies. Promote the economic participation of the local workforce in management activities on Forest Service- and BLM-administered lands where opportunities exist to provide for the rights and interests of tribes.

**Rationale:** Reservation communities are some of the most economically depressed communities in the nation regarding employment and income levels. The tribal communities in Table 3-3, later in this chapter, are where tribal offices are located and tend to have the greatest concentration of tribal members.

Tribes depend on Forest Service- and BLM-administered lands for employment opportunities (such as contracted services or firefighting), subsistence, religious and cultural activities, and to exercise their treaty rights. The federal/tribal trust relationship denotes a unique federal responsibility to tribes that is different from other governmental entities or the general public.

### **B-O57(S3). Objective for Alternative S3 Only.**

Cooperate with federally recognized tribes and tribal communities in their efforts to enhance reservation economies. Promote the economic participation of the local workforce in management activities on Forest Service- and BLM-administered lands. Place the highest priority on management activities in subbasins that are

near or contain reservations, and that have the opportunity to provide for the rights and interests of tribes.

**Rationale:** See rationale for Objective B-O57(S2). Objective B-O57(S3) has a stronger emphasis on conducting activities near reservations than does Objective B-O57(S2), which is consistent with the emphasis in Alternative S3 of identifying high restoration priority subbasins near isolated and economically specialized communities.

**B-O58. Objective.** When promoting the economic participation of the local workforce in management activities, place the highest priority on activities in nearby rural communities or geographic areas that are less economically diverse and more economically associated with goods and services from Forest Service- and BLM-administered lands. These places are referred to in this EIS as “Areas of Economic Specialization” (Map 2-33, in Chapter 2). See also objective R-O34(S3) in the Management Direction–Restoration section.

**Rationale:** The intent of this objective is to help sustain an area through the transition. The objective is not intended to discourage or mask the need for economic diversification or other economic development efforts in economically specialized areas. The objective stems from the recognition that few economic options are available in these areas, that BLM and Forest Service actions may be able to contribute to community vitality, and that the continued existence and vitality of these areas is in the public interest. For more information on how Areas of Economic Specialization were measured, see the *Economic and Social Conditions of Communities* (ICBEMP 1998). While this objective is the same for both Alternatives S2 and S3, more high restoration priority subbasins near economically specialized communities are identified in Alternative S3.

**B-O59. Objective.** Promote collaboration through increased intergovernmental coordination with federal, state, county, and tribal governments, and Resource Advisory Councils, in planning, implementation, and monitoring efforts.

**Rationale:** In addition to contributing to more informed decision making, collaboration is expected to contribute to more predictable implementation of land use plans by fostering support of decisions. Improved collaboration can improve predictability by increasing the level of public support for, and reducing resistance to, management strategies and activities.

**B-S57. Standard.** Within two years after the Record of Decision for this EIS is signed, national forests and BLM districts (individually or in groups) shall initiate a memorandum of understanding (MOU) or equivalent document with appropriate state, county, and tribal elected officials describing how to provide advice and recommendations to Forest Service and BLM managers.

**Rationale:** A formal written agreement is expected to improve the collaborative process by specifying the terms of participation. Specifying a time period for initiating the formal agreement recognizes the importance of the collaborative process to Forest Service and BLM managers and partners. It is intended that the MOU or equivalent document would cover a geographic subregion that makes sense, such as a RAC/PAC area.

**B-O60. Objective.** Develop mutual learning opportunities through technology transfer and training opportunities to enhance the effectiveness of tribal involvement in agency programs.

**Rationale:** There are numerous mutual learning opportunities which would assist the land management agencies in implementation of agency work or programs. For example: using Interagency Personnel Agreements or offering Forest Service/BLM training to tribal people (such as federal contracting procedures/processes, how to apply for federal employment, and prescribed fire techniques/protocol); sending BLM and Forest Service employees to tribal training (such as consultation processes/protocol, tribal organization/structure, Tribal Employment Rights Office (TERO) requirements and information, and treaty seminars).

**B-O61. Objective.** Support federally recognized tribes’ and tribal communities’ subsistence needs to the greatest extent practicable. Fishing, hunting, and gathering, which all contribute to a tribe’s subsistence needs, may also be reserved rights under treaty or executive order. By working with the tribes to be responsive to these social-economic considerations, we can also meet our legal obligations under federal law, policy, treaty, or executive order.

**Rationale:** Beyond commodity-based goods and services, federally recognized tribes have off-reservation rights and/or interests and subsistence needs which depend on the resources and lands administered by the Forest Service and BLM. The federal/tribal trust relationship is unique to federally recognized tribes and denotes a federal responsibility to tribes which is different from other governmental entities or the general public.

**B-S58. Standard.** When conducting or contracting work within the exterior boundaries of a federally recognized tribe's reservation, work cooperatively with the respective Tribal Employment Rights Office (TERO) and ensure knowledge of and compliance with TERO requirements.

**Rationale:** Each tribe has a Tribal Employment Rights Office (see Appendix 8), and this office should be contacted whenever the Forest Service or Bureau of Land Management is considering conducting work within the exterior boundaries of federally recognized tribe's reservation. For example, the BLM has lands they administer which lie within the exterior boundaries of the Nez Perce Reservation. If the BLM wishes to contract for work on these lands, they must comply with the appropriate Nez Perce TERO requirements for hiring, contracting, etc. Another example of a situation where the Forest Service or BLM might conduct or contract work within a reservation is wildland fire fighting on a reservation. The TERO may require contracts with tribally owned companies for equipment, catering services, or other needs, and the agencies should work cooperatively with tribes to fight fires within and across boundaries.

**B-O62. Objective.** In planning and programming, minimize fluctuations in federal land management programs and activities in order to promote a more predictable operating environment for forest and rangeland related businesses.

**Rationale:** Reducing uncertainty improves the business climate and supports greater economic vitality. It also encourages financial investments in forest- and rangeland-related services that contribute to achieving federal land management objectives. This objective reinforces that consistency in the size and regularity of land management programs and activities is important for achieving ecosystem management goals. However, additional factors outside the manager's control—such as funding levels, lawsuits and appeals, or changing conditions on or affecting nearby lands under other ownerships—also affect the predictability of the operating environment for and the outputs derived from federal forest and rangeland management programs.

**B-O613. Objective.** Foster compatibility of land uses and management strategies with local economic development goals through collaboration with local entities.

**Rationale:** Many communities have already begun the process of identifying their strengths, weaknesses, and visions of what they want to be in the future. It is desirable for the Forest Service and BLM to support

these goals within the context of applicable management direction.

**B-O64. Objective.** While designing management activities, make commodity products available for purchase, to the extent possible: (1) to support economic activity important to rural and tribal communities and local governments, (2) to maximize regional market efficiencies, and (3) to achieve management objectives in an efficient and cost effective way. See also objective R-O35 in the Restoration management direction section.

**Rationale:** The commercial use of Forest Service- and BLM-administered and resources can provide social, economic, and cultural benefits to society that are compatible with an ecosystem management emphasis.

**B-O65. Objective.** Facilitate participation of federal employees in community activities to the extent allowable under law and regulation (such as the Hatch Act). Enable federal employees to contribute leadership, planning, economic development, and other skills through involvement in their local communities.

**Rationale:** The federal workforce is an important source of income and human capital in many communities. It is especially important to maintain or increase the participation of federal employees in community activities when communities are experiencing the effects of rapid change to their economic institutions.

**B-O66. Objective.** Minimize the cost to the public to participate in federal analysis and planning processes by reasonable means, such as consolidation and coordination of plans and projects within and among administrative units.

**Rationale:** Federal efforts to implement ecosystem-based management and collaborative stewardship can lead to an increased time and financial burden on the public to participate in an increasing number of analysis, planning, and monitoring events conducted by federal agencies. A concerted effort is needed to minimize this cost of participation.

**B-O67. Objective.** Develop information necessary to assess effects of management actions on minority populations, low income populations, and civil rights during step-down (Subbasin Review, EAWS, or site-specific NEPA) analyses.

**Rationale:** The broad-scale nature of this EIS precluded identifying specific impacts on particular minority and low-income populations. This objective

highlights and reinforces the requirements to evaluate environmental justice (Executive Order 12898) and civil rights impacts (Forest Service Manual 1730 and Forest Service Handbook 1909.15, Chapter 10.15). During step-down analyses, necessary information about local and subregional low income and minority populations and their current and historical relationships to the land should be collected, along with assessments of potential impacts from Forest Service and BLM policies on these populations. This process will meet the requirements for assessing environmental justice and civil rights effects that could be discussed only in general terms in this EIS.

## **Federal Trust Responsibility and Tribal Rights and Interests**

### ***Description and Management Intent***

Twenty-two American Indian tribes may be affected by the decisions made through the ICBEMP. The U.S. government has a trust responsibility to all of these federally recognized tribes. Additionally, these tribes have off-reservation interests within the Columbia Basin, and some have off-reservation rights reserved through treaty or executive order language (see Appendix 8). Agencies are required to manage the lands under their stewardship with full consideration of the federal trust responsibility and these tribal rights and interests, particularly reserved rights where they exist. While this project does not attempt to define the legal obligations of the BLM and Forest Service under the federal trust responsibility, the direction in this EIS relative to tribal governments reflects a commitment, whether as a legal obligation or a matter of policy, to address as fully as possible tribal concerns and interests.

Further, direction reflects consideration of federal legal responsibilities to both tribes and American Indian people as expressed through treaty language, federal laws (such as Civil Rights Act, NEPA, National Historic Preservation Act, and Native American Graves Protection and Repatriation Act), executive orders, and federal court judgements. Consultation with 22 tribal governments potentially affected by the ICBEMP decision identified a wide variety of concerns and several key issues which are held in common by those tribal governments.

Objectives and standards are found throughout this document that are responsive to the breadth of tribal issues—such as restoration of succession/disturbance regimes, habitat restoration, economics, monitoring, and other topics.

Management direction is aimed at achieving the following results in future Forest Service and BLM planning, policy, and decision-making:

1. As with other governments, a collaborative and on-going consultation process characterizes agency-tribal relations.
2. Improved government-to-government relations rely on effective collaboration and consultation, as well as agency ability to recognize common interest, to translate these sometimes different cultural values into agency ecosystem management goals and objectives, and to seek to diminish management procedural barriers.
3. Agencies' customary assessment and management actions consider and strive to respond to tribal rights and/or interests, especially with regard to off-reservation treaty rights.
4. Analysis and subsequent management decisions, including restoration activities and priorities, reflect consideration of the federal trust responsibility to affected federally recognized tribes.
5. Agency personnel recognize that indigenous, subsistence-based traditions and the rights and interests of tribes often support ecosystem management goals and can be founded upon a shared commitment to action.

Some American Indian communities within the project area exist outside reservation boundaries; some of these communities are formally administered by a federally recognized tribe, while others are not. Nothing addressed in this direction is intended to supersede or negate those legal and/or policy requirements applicable to the Forest Service and BLM.

**B-O68. Objective.** Establish and/or maintain a government-to-government relationship with federally recognized tribes. Consult and collaborate with affected tribes when developing and/or implementing land management decisions, actions, and/or policies that may affect the rights and interests of tribes, and/or the socio-economic well-being of tribal people. Consultation should be substantive and seek to understand and be responsive to tribal rights, concerns, and interests. Engage in cooperative activities where shared goals and mutual commitment exist.

**Rationale:** Federal law and policy require the BLM and Forest Service to consult with federally recognized American Indian tribes on land management actions and policies affecting the tribe(s). Because the exercise of treaty rights and tribal culture and practices are so integrally tied to lands now administered by the BLM and Forest Service, it is intended that

consultation reflect the governmental status of the tribe and consideration of the respective treaty, where it exists. Collaborative efforts are substantive when: (1) opportunities for involvement are commensurate with the governmental status of tribes, (2) there is an agency focus on being responsive (more than polite listening), and (3) the subsequent decisions/outcomes reflect agency responsiveness through results such as shared agreement or mutually identified mitigation, and agency documentation discloses how tribal concerns and issues were solicited and addressed.

**B-S59. Standard.** Work with tribes to develop a mutually acceptable protocol for government-to-government consultation, which ensures opportunities for effective tribal participation in decision-making, protects rights, and includes provisions for a dispute resolution process in cases of conflicts between agency and tribal positions.

**B-S60. Standard.** During site-specific NEPA analysis, affected tribes shall be consulted and activities shall be assessed for potential effects on tribal cultural resources. Assessments shall include traditional cultural properties and plant species of special interest to tribes. Assessments should identify and characterize tribal interests, which shall be accounted for in the decision and in implementation. Mutually acceptable procedures between tribes and agencies should be employed. Prior to proceeding with management activities, documentation shall be provided that substantive consultation on tribal interests has occurred, including any necessary mitigation.

**Rationale:** A list of culturally significant plant species is included in Appendix 8. This list is meant to serve as a starting point for collaborative discussion with the tribes, since the species listed may not occur in all areas of the project area or may not be used by all tribes.

**B-S61. Standard.** Initiate agreements with tribal governments specifying repatriation procedures in conformance with Native American Graves Protection and Repatriation Act (NAGPRA) and consultation procedures regarding federal compliance with NAGPRA, National Historic Preservation Act, and Archaeological Resource Protection Act.

**B-S62. Standard.** Where tribes regulate hunting, fishing, gathering and grazing activities of tribal members, acknowledge and be aware of tribal management efforts and work cooperatively with tribes and states.

**B-S63. Standard.** Affected American Indian tribes shall be consulted on any land ownership adjustments

(exchange, consolidation, and/or disposal) of Forest Service- or BLM-administered lands. This consultation should occur prior to any public scoping announcement and before any lands/parcels have been formally agreed upon for inclusion in a proposal or action. Tribes should also be considered as a possible partner for land tenure adjustment opportunities, particularly when such lands are within their ceded lands/territories.

**Rationale:** Federally recognized tribes have interests on lands administered by the Forest Service and BLM. Additionally, those tribes with reserved rights under treaty or executive order exercise those rights on public lands. Typically, standard fair market appraisals do not consider treaty values. If public lands should be exchanged, sold, or otherwise disposed of, then tribes need to be made aware of the resources involved and the effect of the land adjustment, if any, on the exercise of their tribal rights and interests.

**B-O69. Objective.** Better understand and incorporate into federal land management how places are valued by American Indians. (See Chapter 2 discussion of Sense of Place.)

**Rationale:** Different place attachment distinctions are recognized by traditional American Indian communities and tribes compared to those recognized by the general public. These differences in place attachments are in part based on: (1) the greater length of time native cultures have spent in the project area; (2) the greater degree place attachments have been integrated into their culture systems of religion, economy, politics, and social / kinship; and (3) cultural values, histories, and relationships to land, which vary from mainstream American culture and are typically not understood by the general public. Also, some cultural place information may be inappropriate for public dissemination. This can be addressed by developing a separate section in place assessments for American Indian groups.

**B-S64. Standard.** When conducting Subbasin Review and/or EAWS, tribal participation shall be solicited and collaboration with affected American Indian tribes undertaken to identify resources and places of value. This assessment should provide for tribal participation and be commensurate with the analysis conducted to consider resources and places identified by other intergovernmental entities at this scale.

**B-O70. Objective.** Solicit and recognize the legitimacy and contribution of tribal tradition-based knowledge and expertise when collaborating with affected tribes. Use this knowledge to inform agency planning and decision-making processes.

**Rationale:** Tribes have unique knowledge and expertise gained through generations of oral history and cultural teachings. It can contribute to agency understanding of resource values, the history of a place, and the uses that are occurring or have occurred over time. This tradition-based knowledge can be critical to the agencies' understanding of, and response to, the rights and interests of federally recognized tribes. It can also contribute to the agencies' ability to appropriately honor their trust responsibility. When a product or service is needed by the agencies involving this type of information, it might be appropriate to compensate or contract with an affected tribe for it.

## Management Direction — Restoration

### Description and Management

#### Intent: Overall

Restoration needs are diverse, intensive, and widespread in the interior Columbia Basin. In the landscape dynamics context, individual ecosystem components (such as aquatic and riparian areas, rangelands, or forestlands) and succession/disturbance regimes are in need of restoration. Although restoration of individual components will contribute to long-term needs, restoration of any one component will be less effective in the long term if the other components are not also in good health and if succession/disturbance regimes are not intact. Restoration should be accomplished in an integrated fashion to benefit aquatic and terrestrial species, forest health, rangeland health, and watershed health, as well as for economic, tribal, and other needs of society.

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***Restoration management direction is intended to be applied wherever restoration activities occur—whether based on local or broad-scale priorities.***

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Restoration management direction is intended to be applied wherever restoration activities occur—whether based on locally identified, broad-scale functional (one resource), or broad-scale integrated restoration priorities (see following discussion).

Development of the restoration management strategy is described more fully in Appendix 15.

**Locally Identified Priorities:** Restoration will proceed in areas that are locally identified as priorities for restoration, as is the case currently. ICBEMP restoration direction is intended to be applied where the appropriate conditions occur and where local administrative units have prioritized their restoration activities. ICBEMP restoration direction focuses on broad-scale issues that cross more than one administrative unit, yet are applicable within individual administrative units if the appropriate conditions are found.

**Broad-scale Functional Restoration Priorities:** Six maps portray various components of the Interior Columbia Basin and its ecosystems, including landscape (Map 3-2), aquatic (Map 3-3), water quality (Map 3-4), old forest/rangeland habitat (Map 3-5), economic (Map 3-6), and tribal (Map 3-7). They were developed to assist administrative units by providing broad-scale context during Subbasin Review to assist in stepping-down broad-scale recommendations for restoration priorities to prioritize local restoration activities. This is done by highlighting those subbasins that have numerous functional (single resource) restoration priorities and good opportunity for restoration to be achieved through Forest Service and BLM management actions. These maps are also intended to provide information for Forest Service regional and BLM state offices in order to influence budget planning.

**Broad-scale High Restoration Priority Subbasins for Alternative S2:** Subbasins that are identified as broad-scale high restoration priority are shown on Map 3-8. This map was derived from the broad-scale functional restoration priority maps (Maps 3-2 through 3-7). The intent for the high restoration priority subbasins is to concentrate restoration efforts (such as aquatic, water quality, vegetation management, reestablishing fire), and to make restoration activities more effective and efficient. Identification of these subbasins was based on: risk to aquatic and terrestrial species and their habitats from natural disturbances; opportunity to reduce those risks, improve habitats, provide the appropriate mix of habitats, and fix succession/disturbance regimes; ability to provide connectivity for and expand scarce aquatic and terrestrial habitats; hydrologic processes; economic value to human communities; and ability to restore other biophysical

and/or social needs where opportunities exist. Additional aquatic priority subbasins were included to expand and improve extent, condition, and connectivity of aquatic habitat. These priorities were determined from a broad-scale perspective to identify multiple restoration opportunities that would also be responsive to variable funding levels.

**Broad-scale High Restoration Priority Subbasins for Alternative S3:** Subbasins that are identified as broad-scale high restoration priority are shown on Map 3-9. This map was derived from the broad-scale functional restoration priority maps (Maps 3-2 through 3-7). The intent for the high restoration priority subbasins is to concentrate restoration efforts (such as aquatic, water quality, vegetation management, reestablishing fire) in subbasins near isolated, economically specialized communities, and to make restoration activities more effective and efficient. Identification of these subbasins was based on: risk to aquatic and terrestrial species and their habitats from natural disturbances; opportunity to reduce those risks, improve habitats, provide the appropriate mix of habitats, and fix succession/disturbance regimes; ability to provide connectivity for and expand scarce aquatic and terrestrial habitats; hydrologic processes; and economic value to human communities. These priorities were determined from a broad-scale perspective to identify multiple restoration opportunities that would also be responsive to variable funding levels, prioritizing actions in subbasins near or containing isolated, economically specialized communities.

However local restoration priorities are set, management direction related to succession/disturbance regimes and other aspects of landscape restoration is intended to provide the foundation for other restoration activity. Therefore, landscape restoration management direction is presented first in this section. Terrestrial source habitat restoration management direction follows, focusing on the vegetation cover types and structural stages that have declined substantially in geographic extent from the historical to the current period. (NOTE: unless otherwise specified, source habitat discussions refer to all 12 Terrestrial Families.) Water quality restoration and aquatic habitat needs are addressed next. Direction related to social and economic considerations, including tribal aspects, is provided to highlight areas where restoration activities have a direct influence on human community economic and social needs.

Restoration in all cases is intended to be consistent with direction for aquatic (A1 or A2) subwatersheds; terrestrial (T) watersheds; riparian areas; and threatened, endangered, and proposed species habitat. Some

federally listed species have approved recovery plans, which identify specific recovery actions, some of which are oriented toward improving habitat condition on Forest Service- and BLM-administered lands. Consistent with standard B-S31, restoration management activities are intended to be tiered to these approved recovery plans where applicable.

## Landscape Restoration

### Description and Management Intent

The restoration of landscape succession/disturbance regimes is the foundation of the strategy to manage long-term risk to aquatic and terrestrial species. The intent of landscape restoration direction is to repattern vegetation patches and succession/disturbance regimes and to restore watersheds and streams to a condition more consistent with landform, climate, and biological and physical characteristics of the ecosystem. Such restored ecosystems will be more resilient to disturbances, more predictable, and will provide the range of habitats needed by aquatic and terrestrial species. This risk management strategy conserves scarce habitats in the short term while expanding these habitats through restoration in the long term.

Landscapes are healthy when their intertwined components and processes are functioning properly, in the context of the desires and needs of society. Individual components and processes are woven together by the thread of succession/disturbance regimes (such as fire, flood, windthrow, insects, and disease) and processes (such as the flows and cycles of energy, nutrients, and water). Intact succession/disturbance regimes provide for terrestrial and aquatic habitats, intact hydrologic processes, and the continuous and predictable flow of products and land uses. These landscape considerations and their dynamics are the cornerstones of landscape health.

### Ecosystem Processes and Functions

**R-01. Objective.** Consolidate and coordinate restoration activities to the extent possible, where multiple needs can be addressed relative to aquatic health, riparian processes and functions, forest health, rangeland health, recovery and redistribution of source habitats, water quality, recovery of succession/disturbance regimes, and socio-economic and tribal needs. Look for situations where there are multiple benefits—that is, where the landscape components can be restored for the benefit of short- and long-term



**Map 3-2. Broad-scale Landscape Restoration Priorities.**



**Map 3-3. Broad-scale Aquatic Restoration Priorities.**



**Map 3-4. Broad-scale Water Quality Restoration Priorities.**



**Map 3-5. Broad-scale Old Forest/Rangeland Habitat Restoration Priorities.**



**Map 3-6. Broad-scale Economic Restoration Priorities.**



**Map 3-7. Broad-scale Tribal Restoration Priorities.**



**Map 3-8. Alternative S2: Broad-scale High Restoration Priority Subbasins.**



**Map 3-9. Alternative S3: Broad-scale High Restoration Priority Subbasins.**

landscape health, diversity, and species viability, and where economically specialized and/or isolated communities can be provided economic and employment opportunities.

**Rationale:** Although much of the project area is in need of restoration, budgets preclude completing all of it in the near future. Concentrating efforts in localized areas (subbasins), rather than spreading scarce resources thinly across the project area, will be most cost effective and have the greatest positive impact in the project area. The timing of restoration activities (for example, first using existing roads to restore the uplands then removing the roads after the upland restoration is complete) makes efficient use of existing features. Coordinating restoration efforts as they are being designed and planned saves time and money in the end. Prioritizing restoration where it is needed and where it has the potential to benefit communities ensures that both facets of the Need statement (in Chapter 1) are addressed.

**R-O2. Objective.** Restore vegetation patches, patterns, structure, and species composition to be more consistent with the landform, climate, and biological and physical characteristics of the ecosystem, and to provide source habitat for terrestrial species. Manage disturbances to make vegetation patterns more consistent with their location on the landscape.

**Rationale:** Restoring the following potential vegetation groups to be consistent with the landform, climate, and biological and physical characteristics of the area will establish source habitats where they have declined historically:

In *dry forests*, ridges, terraces, and plains typically supported late seral single story stands of shade-intolerant species. In some places in dry forests of the project area, Douglas-fir acts like the shade-intolerant species. Where this occurs, this objective would apply to Douglas-fir. On easterly, westerly, and southerly slopes, there typically would be predominantly late seral single story forests of shade-intolerant trees mixed with small, early seral and mid seral patches. North slopes, draws, and riparian zones typically supported a mixture of shade-tolerant and shade-intolerant species in either early, mid, or late seral stage and multi-story old-forest structure (Hann, Jones, Karl, et al. 1997). Frequent low intensity fire is an important ecological maintenance process in dry forest.

In *moist forests*, it is desirable to restore benches, terraces, or ridges first because there is likely to be the most restoration potential there. These areas on the landscape have the greatest departure from natural conditions of the moist forest and therefore have the

greatest need of restoration. Once restored, they can be maintained relatively easily. The goal is to remove many of the shade-tolerant trees and fuel ladders and give growing space to the larger trees, especially western white pine, western larch, and ponderosa pine. The result should be a single story structure which could be maintained through future burning and/or thinning. Creation of openings in forests will be needed to get white pine or larch back onto the landscape. On mountain slopes, it is appropriate to let much of the moist forest remain in a multi-story old forest structure with a larger component of shade-tolerant species. The patch and pattern should fit the landscape and the historical disturbance regime.

In *cold forests*, much of the landscape has become more homogenous because of either large fires or lack of fire. Timber harvest, prescribed fire, and "wildland fire use for resource benefit" (previously referred to as prescribed natural fire) create patches and patterns on the landscape that are more consistent with landform, climate, and biological and physical characteristics of the ecosystem. However, it is intended that appropriate proportions of the landscape be kept in early, mid, and late seral stages.

Most of the *dry grass* loss to date has been through conversions to agricultural cropland and pastureland, and to urban development; however, the rate of these conversions has slowed substantially since most of the farmable lands already have been converted. Currently the biggest concerns in the dry grass potential vegetation group are conifer encroachment and exotic plant invasions. Restoration efforts in the dry grass group are intended to focus on bringing fire back into the system, to reduce conifer encroachment, and to reduce or eliminate the spread of noxious weeds and other exotic plants. However, caution must be exercised when bringing fire back into the system since fire may enhance the opportunity for noxious weed establishment; noxious weed control measures may need to be part of any fire treatment.

Most of the *dry shrub* loss was a result of agriculture and urban development, similar to dry grass. Currently, the invasion of exotic plants is the most significant concern. Restoration efforts are intended to be tied to reducing and eliminating the spread of noxious weeds and implementing livestock grazing systems that are conducive to improving dry shrub conditions.

*Cool shrub* loss also was due to agricultural and urban development. Currently the encroachment of Douglas-fir and juniper is the most significant concern. Restoration efforts are intended to be tied to controlling these species and returning the historical fire regime to the cool shrub potential vegetation group.

In riparian herbland, shrubland, and woodland areas, much of the area has been altered by activities such as excessive grazing pressure, road construction, and/or timber harvest. Initially, the highest priority is restoration of riparian habitat, processes, functions, and connectivity. Restoration efforts are intended to focus on increasing diversity and improving structure of riparian vegetation, banks and bank stability, width and depth ratios, limiting or managing the impacts of noxious weeds, improper grazing, roads, and timber practices. Restoration efforts in riparian areas are designed to provide minimum risk to riparian and aquatic values in comparison to restoration efforts in other areas.

**R-G1. Guideline.** Priority should be given to restoring whole hydrologic units if resources are available and if the land base provides the opportunity. Consider completing restoration treatments within five years. Avoid reentry for a duration that approximates the time interval between natural disturbance events.

**R-G2. Guideline.** To promote development of late seral single layer ponderosa pine, consider using thinning, harvesting, and/or prescribed fire on existing mid seral forest structural stages. Stand structure, condition, composition, density, fuel loading and arrangement, and litter and duff depth may be matched to the desired fire regime. The success of sustaining shade-intolerant tree species would depend on recurring disturbance.

**R-G3. Guideline.** Consider using the existing road network for access to do restoration activities before removing roads in watersheds where vegetation restoration is a priority.

**R-O3. Objective.** Individual or collective upland restoration management actions that alter the vegetation composition (such as prescribed burning, weed control, thinning, and seedings) should:

- a. Retain or promote infiltration, permeability, and soil moisture storage;
- b. Minimize soil loss and sediment delivery that is in excess of natural disturbance processes;
- c. Maintain or restore nutrient cycling and energy flow;
- d. Maintain and restore water quality;
- e. Minimize the increase and spread of noxious weeds, above the inherent increase and spread of noxious weeds by natural disturbances (such as wildfire);
- f. At the subbasin scale (or groups of subbasins), contribute to the diversity (distribution and

abundance) of (1) native plant cover types and structural stages (source habitats); and (2) native plant and animal species and, if natives cannot be restored, desired non-native plant and animal species;

- g. Support the conservation of threatened, endangered, proposed, candidate, and sensitive species through source habitat restoration; and
- h. Be followed up with land use management that maintains the restored conditions.

**Rationale:** This objective is adapted from the standards for rangeland health and guidelines for livestock grazing management (Healthy Rangelands Initiative), which are currently being implemented by the BLM. It has been modified to apply to both forested lands and rangelands. It is a comprehensive, basin-wide objective, which is consistent with both the aquatic and terrestrial habitat portions of the ecosystem management strategy. "*Individual or collective upland restoration management actions*" is meant to accommodate situations where more than one management action, in sequence, might be required to accomplish restoration. For example, herbicide weed control followed by seeding, or pre-scribed burning followed by weed control.

Bullets "a-c": Changes have taken place in soils, biomass storage, energy flows, and net primary productivity because of changes in succession/disturbance regimes and vegetation structure and composition. In order to restore and maintain soil productivity and nutrient cycling, and to have sustainable vegetation growth and vigor, soils need to continue to develop under conditions similar to those with which they originated.

Bullet "e": In some instances, upland restoration actions, such as prescribed burning, can encourage noxious weed spread. Subsequent weed control would help prevent or minimize the increase and spread of noxious weeds. Therefore, although prescribed burning in itself might contribute to noxious weed increase and spread, the intent of this objective is not to prohibit prescribed burning if it is combined with subsequent weed control.

Bullet "f" is written to focus on both plant community (cover type-structural stage combination) diversity and species diversity. The intent is for upland restoration to perpetuate the existence and development of native plant cover types and structural stages (terrestrial source habitats), and native and desired non-native species, minimizing their loss across and within landscapes. The intent is not to conduct upland restoration management actions to achieve as much diversity as possible regardless of climate,

landform, soils, and succession-disturbance regimes; such an approach could lead to undesirable fragmentation of native plant cover types and structural stages due to reductions in patch size. Bullet “f” focuses diversity at the scales of subbasin or groups of subbasins, which is consistent with the broad-scale nature of ICBEMP, the broad-scale vegetation data developed through the ICBEMP, and fostering connectivity of plant and animal habitats across the project area. The expectation is that each administrative unit will manage cover type and structural stage diversity at watershed, subwatershed, and finer scales, resulting in diversity at the scale of subbasin or groups of subbasins.

Bullet “h” is intended to prevent “backsliding” of resource conditions after improvements from restoration. For example, if excessive historical livestock grazing pressure contributed to the increased density of western juniper, prompting the need for upland restoration (such as prescribed burning), then the intent is that livestock grazing management following the burn would be consistent with maintaining the new desired conditions as a result of the prescribed burning. (In other words, grazing should not increase the density of juniper in the future.)

**R-G4. Guideline.** Consider areas used by species such as sage grouse, sharptailed grouse, and mountain quail as a high priority for conversion of exotic monocultures to native shrublands. Especially consider such areas in the Upper Snake and Lower Snake Resource Advisory Council (RAC) areas (see Map 2-1).

**R-G5. Guideline.** Consider the following when seeding altered sagebrush steppe and other areas:

- ♦ oils and precipitation;
- ♦ Availability of local native seed;
- ♦ Ability of seeded species to compete with exotic annuals;
- ♦ Long-term success of seeded species meeting objectives;
- ♦ Risk of failure;
- ♦ Meeting biodiversity and wildlife needs;
- ♦ Not creating monocultures;
- ♦ Fragmentation and patch-size issues;
- ♦ Planting and regeneration of shrub species.

**R-G6. Guideline.** Consider laying out vegetation manipulation projects over a large enough area so that livestock and wildlife use will not be concentrated in one area.

**R-O4. Objective.** Use an integrated mix of restoration activities to repattern succession/disturbance regimes and achieve sustainable landscape conditions. Prioritize and use management activities appropriate for the management emphasis of an area (such as wilderness-type areas, aquatic A1 and A2 subwatersheds, terrestrial T watersheds, and high restoration priority subbasins), and placement on the landscape (such as within the dry forest or cool shrub potential vegetation group), during the appropriate step-down process (programmatic planning, Subbasin Review, EAWS, or site-specific NEPA analysis).

**Rationale:** Restoration activities include: silviculture, rangeland management, noxious weed control, reduction of adverse road effects, prescribed fire, and aquatic/ hydrologic restoration. To reduce further fragmentation of the landscape, priority should be given to restoring whole hydrologic units if resources are available and if the land base provides the opportunity. The most effective types and mix of restoration activities will vary depending on the emphasis or priority of an area, which depends on the management intent and management direction. For example, restoration activities in an A2 subwatershed would probably focus on aquatic/hydrologic restoration and reduction of adverse road effects, whereas restoration in low and mid-elevation old forest might include silvicultural techniques and prescribed fire to accelerate the old forest characteristics of the area. Appendix 14 describes the types of activities that could be most effective in areas with different emphases or priorities, including wilderness-type areas, A1 and A2 subwatersheds, T watersheds, urban-rural-wildland interface areas, and high restoration priority subbasins.

**R-O5. Objective.** Reduce the risk from wildland fire in urban-rural-wildland interface areas. Where there is risk to human life and property from wildfire, reduce heavy fuel levels, flash fuels, ladder fuels and connectivity among crowns in the dominant vegetation layer.

**Rationale:** There are urban-rural-wildland interface areas at moderate and/or high risk from wildfire in all the RAC/PAC areas. A priority in these areas is fuels reduction through prescribed fire, silviculture, livestock grazing, and other methods of vegetation management, either alone or in combination (for instance, thinning or brush control prior to prescribed burning). Fuels reduction should decrease the likelihood for loss of life or damage to property from wildfires.

**R-O6. Objective.** Sustain hydrologic processes characteristic of the geoclimatic settings through management actions that resemble effects of natural

disturbance processes. Hydrologic processes critical for balanced landscapes/ecosystems include, but are not limited to, stream flows and sediment in channels.

**Rationale:** Broad-scale geoclimatic settings influenced by time and disturbances produce landforms, soils, and vegetation with inherent variability in performance elements such as stream channel form, large wood, stream flow and sediment regimes. *Stream flow regimes* include timing, magnitude, duration, and spatial distribution of peak, high, and low flows. *Sediment regimes* include timing, volume, rate, and character of sediment input, storage, and transport. Characteristic stream flows (including floodplain inundation and water table elevation) and sediment regimes are essential to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.

**R-G7. Guideline.** Consider the spatial and temporal role of natural disturbances within uplands and riparian areas when planning restoration of hydrologic processes. Consider vegetation management practices that are compatible with the spatial and temporal disturbance processes and patterns to restore hydrologic processes that are representative of the geoclimatic setting.

**R-O7. Objective.** Restore and maintain flow regimes sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. Flow regimes include timing, magnitude, duration, and spatial distribution of peak, high, and low flows.

**R-O8. Objective.** Restore and maintain the timing, variability, and duration of floodplain inundation and water table elevation.

**R-O9. Objective.** Provide distribution, diversity, and complexity of watershed and landscape-scale processes to restore and maintain aquatic and riparian systems and species, populations, and communities.

## Native Species and Biological Crust

**R-O10. Objective.** Restore the native grass, forb, and shrub composition within the sagebrush and shrub steppe cover types (source habitat for Terrestrial Family 11). Reclaim areas from cheatgrass monocultures in these cover types and slow the spread of non-native species.

**Rationale:** Native plant abundance, frequency, and vigor in the big sagebrush cover type have changed significantly from historical times on federal lands because of the invasion of annual grasses, especially cheatgrass, and other exotic plants. Restoration of

ground cover, diversity, and site productivity is critical to the health of the rangeland ecosystem. Some cover types (big sagebrush, salt desert shrub) when under stress or disturbed by drought, fire, excessive grazing pressure, or other factors provide the opportunity and place for these invasive exotic plants to become established. Once established, biodiversity is diminished and wildfire frequency increases. This reduces the structure and quality of habitat for sagebrush-dependent and other terrestrial species. Winter ranges for species such as deer, elk, and sage grouse are typically in lower elevation areas, normally in big sagebrush or salt desert shrub cover types. Restoration of the structure and quality of habitat in these cover types is critical to the persistence of wildlife species that depend on them.

**R-S1. Standard.** Native species or cultivars shall be used for seedings and plantings unless native species are not capable, available, or cost effective in maintaining or achieving objective R-O10.

**Rationale:** The intent of this standard is to require the use of native plants or cultivars whenever the need arises for seeding or planting to meet objective R-O10. However, it is understood that circumstances may make this requirement infeasible. These circumstances include: areas where planting native species is not feasible or will not achieve the objective (for example, low precipitation areas such as salt desert shrub or possibly areas of exotic plant infestations); when native seeds or seedlings are not in sufficient quantities to achieve the objective; or when the cost of native seed or seedling purchase is beyond the funding available for the activity.

**R-G8. Guideline.** Consider emphasizing native seeds or seedlings that can be obtained from local genetic stock to prevent the introduction of genetic material that may not be adapted or appropriate for local conditions.

**R-O11. Objective.** Manage land uses and reduce the extent of exotic plant invasions to allow the restoration of biological crust (microbiotic crust) development where potential for biological crust development is high. Focus priority within the salt desert shrub cover type, Wyoming big sagebrush portion of the big sagebrush cover type, and low sage cover type (source habitats for Terrestrial Families 11 and 12) where site-specific features such as soil texture, vascular plant cover, and precipitation pinpoint high potential for biological crust development.

**Rationale:** Biological crust development in the salt desert shrub cover type, Wyoming big sagebrush portion of the big sagebrush cover type, and low sage cover type (which have been altered by recreational

activities, excessive livestock grazing pressure, or exotic undesirable plant invasions) can be integral to restoration of rangeland health and restoration of terrestrial source habitats for species such as pygmy rabbit, sage grouse, and mule deer. Biological crusts play many ecological roles, particularly on low precipitation sites with limited vascular plant cover where there is high potential for biological crust development. Some of these roles include: (1) protection of soil surfaces from erosion from wind and water (soil stability), (2) nutrient cycling, (3) facilitating native perennial species establishment and (4) hindering establishment of exotic undesirable species such as cheatgrass and medusahead (Hann, Jones, Karl et al. 1997; Wisdom et al. in press).

High potential for biological crust development exists within the salt desert shrub cover type, drier portions of the big sagebrush cover type (such as Wyoming big sagebrush), and the low sage cover type. However, a site-specific evaluation of potential biological crust development should be performed because the degree of biological crust development within these and other cover types depends on factors such as soil texture, amount of vascular plant cover, precipitation, and other factors.

An existing, draft biological crust evaluation developed by the BLM-Idaho State Office (Kaltenecker, Rosentreter, and Pellant 1999; see Appendix 13) may be used at site-specific scales to pinpoint (1) where there is high potential for biological crust development within these three cover types and other cover types, and (2) under what conditions biological crust development is affected by land uses (such as livestock grazing and recreation). It is expected that this or a similar evaluation method would be conducted during existing rangeland assessments such as rangeland health assessments (meeting Healthy Rangelands standards and guides). However, assessments could also be conducted during field work for allotment or geographic area evaluations, or during any other anticipated field surveys or assessments. It is not the intent of this objective to require administrative units to assess rangelands solely to determine the potential for biological crusts.

**R-G9. Guideline.** Consider modifying season of use to avoid trampling of biological crusts in the dry season in areas where biological crusts exceed 10 percent of the potential ground cover.

**R-G10. New Guideline.** Consider defining and scheduling spring and fall grazing at the fine scale to reflect actual soil moisture conditions to avoid severe disturbance of biological crust when soils are extremely dry.

## Road Restoration

### *Description and Management Intent*

Roads significantly modify landscapes and ecological processes; at the same time, roads facilitate public access and accomplishment of many land stewardship objectives. When planning and implementing restoration activities, managers need to: (a) consider the role roads play in facilitating public access and resource management; and (b) address the impacts of existing roads and road-related effects.

The intent of ICBEMP road restoration direction is to reduce road-related adverse effects through a variety of techniques including obliteration, closures, and road improvements. The direction acknowledges that road risk and road effects are not determined solely by road density but vary substantially depending on factors such as geology, landform, climate, slope position, road condition, and road design. A science-based analytical tool (roads analysis) has been developed to help managers distinguish variability. Roads analysis also can be used to systematically and objectively evaluate road networks for restoration of road-related adverse effects. ICBEMP road restoration direction intends that science-based roads analysis and Subbasin Review be used to provide information and context needed to effectively and efficiently reduce road-related adverse effects.

The overarching intent for roads management within the project area is to progress, in a staged approach, toward a smaller transportation system that can be effectively and efficiently maintained into the future with minimal environmental impact. Restoration should focus primarily on places where reduction of adverse effects and benefits to resources can be maximized—for example, along valley bottoms and main river corridors and in areas where terrestrial, riparian, and aquatic species are negatively affected by human disturbance and direct habitat degradation associated with roads. Generally, most issues surrounding road condition, risk, and management opportunity for restoration are more substantial on forested lands than on rangelands.

**R-O12. Objective.** Restore terrestrial, riparian, and aquatic habitats where adverse effects or pending risks to these habitats from roads can be quickly reduced and benefits to these species can be maximized.

**R-S2. Standard.** A science-based roads analysis process shall be used at multiple scales, as appropriate, to systematically and hierarchically evaluate existing road system needs and to establish priorities for road restoration activities.

**Rationale:** The roads analysis process is intended to identify a balance between (a) the retention of a safe, efficient road system to meet public demands, land stewardship, and tribal needs; and (b) the identification of those roads no longer needed and reduction of adverse effects and potential adverse effects on clean water, aquatic/riparian and terrestrial species habitats, native vegetation, and other natural resources. The intent is that the roads analysis process will be a component of Subbasin Review, EAWS, or other processes, as appropriate, and will support Forest Service or BLM land use plan revision, Access and Travel Management Plans and other transportation plans, water quality restoration plans, and site-specific activity planning.

**R-O13. Objective.** Progressively reduce road-related adverse effects on watershed integrity, soil productivity, and aquatic/riparian and terrestrial species and their habitats in a staged, annual approach, throughout the life of this plan (10–15 years). Priorities shall be established in part by information and recommendations from Subbasin Review and roads analysis.

**Rationale:** Road access is needed for resource management, meeting tribal needs, and public use. Tribes, property owners with lands surrounded by federal lands, and others have legal rights to road access to and through agency-administered lands. However, the *Assessment of Ecosystem Components* (Quigley and Arbelbide 1997) identified roads as a major impact on a multitude of physical and biological processes. For example: roads provide a major pathway for the spread of noxious weeds; roadways are prone to erosion and can cause increased sedimentation, adversely affecting hydrologic or sediment regimes and aquatic habitat; road access increases human-wildlife conflicts; and roads fragment terrestrial habitat. In recognizing adverse effects of road systems, there is a need to intentionally and progressively restore some areas through road management practices that reduce adverse effects.

**R-S3. Standard.** Information to support finer scale restoration-related roads analysis shall be a component of Subbasin Review. Restoration-related roads analysis shall be incorporated into or conducted concurrently with planned EAWS and/or site-specific NEPA analysis.

**Rationale:** Hierarchical roads analysis will help determine road-related effects and risks and identify beneficial uses and values. Roads analysis at various scales will provide recommendations on locations and techniques to support road restoration activities.

**R-G11. Guideline.** Consider using the following techniques to reduce adverse effects on aquatic/riparian and terrestrial species and their habitats as feasible:

1. Reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards; have been shown to be less effective for controlling sediment delivery; prevent attainment of terrestrial, aquatic, or riparian objectives; or do not protect watersheds from increased sedimentation and peak flows.
2. Prioritizing reconstruction based on current and potential damage to terrestrial, aquatic, or riparian resources; ecological value of the resources affected; and feasibility of options such as helicopter logging and road relocation out of riparian conservation areas.
3. Closing and stabilizing or obliterating and stabilizing roads not needed for future management activities. These actions should be prioritized based on current and potential damage to terrestrial, aquatic, and riparian resources and ecological value of the resources affected.

**R-S4. Standard.** Information from the roads analysis shall be used to reduce road-related adverse effects over the next 10 years. Quality and quantity road indicators and road-related use shall be used to assess the adverse effects on aquatic/riparian and terrestrial species and their habitats. Road quality will be measured by progress toward the road system determined to meet future transportation needs. The primary indicator for road quantity will be Forest Service/BLM-classified roadway miles per square mile measured at the subbasin scale. The primary indicators for road-related use are amount, type, and season of use.

**Rationale:** The intent of this standard is that restoration activities will be prioritized based on risks and budgets; so that the most significant effects can be reduced first. The intent is not that all road-related effects should be reduced, realizing there are benefits and trade-offs associated with roads.

**R-G12. Guideline.** Consider including the following techniques when planning and implementing activities to reduce road-related adverse effects and/or accomplish road restoration: obliteration; permanent closures; seasonal closure; road improvements (upgrade culverts, grade, surfacing, design changes); relocation of roads or road segments; and noxious weed control and management.

**R-S5. Standard.** Where existing structures pose a substantial risk to riparian conditions, design new or improve existing culverts, bridges, and other stream crossings to accommodate a 100-year flood, including associated bedload and debris. Priority for upgrading shall be based on risks and the ecological value of the resources affected as determined from roads analysis. Construct and maintain crossings to prevent diversion of streamflow out of the channel.

**Rationale:** Structures posing a *substantial risk* are defined as those that do not meet design and operation maintenance criteria, or that have been shown to be less effective for controlling erosion, or that prevent attainment of aquatic, and riparian objectives.

## Terrestrial Source Habitat Restoration

### Description and Management Intent

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*Increasing the geographic extent and connectivity of source habitats that have declined significantly from the historical to the current period will require reduction in geographic extent and connectivity of other source habitats that have expanded, such as mid seral multi-story forests.*

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The management direction to repattern terrestrial habitats focuses on the vegetation cover types and structural stages that have declined substantially in geographic extent from the historical to current period within most RAC/PAC areas where they existed historically). Examples of such terrestrial habitats are interior ponderosa pine—old forest, single and multi-story, and big sagebrush—open low-medium shrub. The intent of the management direction is to increase the geographic extent and connectivity of these habitats to aid the long-term survival of species dependent on them. Increasing the geographic extent and connectivity of these source habitats will require reduction in geographic extent and connectivity of other source habitats, such as mid seral multi-story forests, that have expanded in geographic extent from the historical to current period. Management actions to repattern terrestrial habitats by increasing the geographic extent of source habitats that have declined substantially should, over time, provide a framework for well-connected networks of source habitat for terrestrial species.

This direction is intended to be followed wherever restoration occurs. Whenever possible, restoration management should be applied outside the source habitat(s) in T watersheds. This is intended to achieve the long-term management objective to facilitate persistence of the source habitats and augment their extent and connectivity. Unless otherwise specified, source habitat discussions in this section refer to all 12 Terrestrial Families as identified in Wisdom et al. (in press). See the Base Level Terrestrial Source Habitats Description and Management Intent for information on source habitats and the 12 Terrestrial Families.

### General Terrestrial Habitat Restoration

**R-O14. Objective.** Restore terrestrial source habitats to provide for species needs. Increase the geographic extent of vegetation cover type–structural stages that have declined substantially from the historical to the current period within most RAC/PAC areas in the project area, and repattern the vegetation patches so they are consistent with disturbance regimes and with the landform, climate, and biological and physical characteristics of the ecosystem.

**Rationale:** Changes have taken place in vegetation composition and structure, which have resulted in a scarcity of some habitats while others are over-represented. Habitats often are established where they are not resilient to disturbance or sustainable in the long term. By repatterning terrestrial habitats to be more consistent with the disturbance regime and other ecosystem characteristics, the habitats should be more resilient and sustainable. At the same time, repatterning will provide the habitats terrestrial species are lacking.

**R-G13. Guideline.** Consider using prescribed fire for reducing woody species such as ponderosa pine, juniper, Douglas-fir, and mountain big sagebrush, on sites where they are displacing the native understory vegetation and where perennial grasses are still present in adequate amounts to permit fire.

### Old Forest/Rangeland Habitat Restoration Priorities

Broad-scale old forest/rangeland habitat restoration priorities (Map 3-5) and a subsidiary map used in its development (Proposed Terrestrial Family Habitat Restoration Emphasis [Map 2-11a, in Chapter 2]; developed from maps in Wisdom et al. [in press]), were used to develop the broad-scale high restoration priority subbasins (Maps 3-8 and 3-9) and to provide broad-scale context for finer scale terrestrial habitat restoration priorities and approaches. Some finer

scale terrestrial habitat restoration priorities (for example, the restoration direction and management intent for T watersheds) are provided in this EIS because of the urgency to secure terrestrial source habitats in the short and long terms from threats to its geographic extent and condition. During Subbasin Review, the broad-scale old forest/rangeland habitat restoration priorities (see Map 3-5) and T watershed restoration priorities (Map 3-10) can be integrated to develop a mid-scale strategic approach to restore terrestrial source habitats. This is intended to help achieve a well-connected network of secure and productive habitats, which should ensure the long-term survival of populations or species.

**R-O15. Objective.** During Subbasin Review, use broad-scale old forest/rangeland habitat restoration priorities (Map 3-5) combined with the T watersheds (see Map 3-10) to provide a broad-scale context when developing local long-term terrestrial habitat restoration priorities and approaches.

**Rationale:** Integrating the old forest/rangeland habitat restoration priorities (see Map 3-5 and Appendix 15 [Restoration Strategy]) with the T watersheds would provide broad-scale context concerning the relative importance of terrestrial habitat restoration within one subbasin compared with its importance in the project area as a whole. While using Map 3-5, the Proposed Terrestrial Family Habitat Restoration Emphasis map (Map 2-11a, used to develop Map 3-5) should also be considered because it gives a subbasin-scale insight into the Terrestrial Families and their source habitats that have decreased the most (in geographic extent) on BLM- and Forest Service-administered lands.

### **Forest Composition and Structure**

**R-O16. Objective.** Increase the geographic extent of the forest cover types and/or structural stages listed in Table 3-1, where they are consistent with the landform, climate, and biological and physical characteristics of the ecosystem and where they have declined substantially in geographic extent from the historical to the current period within most RAC/PAC areas in the project area. In forestlands, the highest priority is in watersheds dominated by the dry forest potential vegetation group in areas with high fuel levels, high potential for crown fire, and high risk from insects and disease. Focus next on watersheds dominated by the moist forest PVG.

**Rationale:** Fire suppression and timber management practices have caused substantial changes in the geographic extent and connectivity of some forest cover types. The geographic extent of forest cover

types in Table 3-1 has declined substantially since the historical period as a result of management actions. The intent of this objective is to increase the geographic extent and connectivity of these cover types through mostly active restoration activities. These activities include, but are not limited to, harvest, thinning, prescribed and managed wildland fire, and planting. The greatest departure (difference) from historical conditions has taken place in dry forest PVGs. Priority should be given to restoring whole hydrologic units if resources are available and if the land base provides the opportunity.

*Aspen:* Aspen is a declining cover type that is important to many wildlife species and is intended to be restored where it existed on the landscape. Vigorous aspen stands readily regenerate after disturbance events. In the absence of disturbance, aspen trees age and are replaced by other cover types, such as shade-tolerant conifers. Aspens that have aged to a stage of decadence do not regenerate well. Stands can be regenerated by fire and/or overstory removal if they have adequate vigor. Aspens may be planted where stands are too decadent to regenerate or where the clone has disappeared from the site. The key is to keep the stand recycling through application of periodic disturbances. It is intended that administrative units continue to produce enough aspen stands in the stand-initiation stage to ensure adequate future levels of a mix of age classes on the landscape.

*Single story and multi-story old forest (low elevation):* Of the cover type-structural stages used by wildlife species associated with low elevation old forest, the single story ponderosa pine has had the greatest net decline since historical times. Others that have declined substantially in geographic extent from the historical to the current period are the multi-story western larch, interior ponderosa pine, and cottonwood-willow. The terrestrial strategy in part manages long-term risk; for example, increasing the geographic extent of these late seral cover type-structural stages to levels closer to historical. The components of old forests that are most important to restore are the plentiful number and large size of snags and the elements important for connectivity of terrestrial species populations and for soil productivity. From a basin-wide perspective, the loss of large ponderosa pine trees is particularly significant. Other important old forest elements are stand-initiation patches and clumps of snags that are in decline.

*Single story and multi-story old forest (mid-upper elevation):* Of the cover type-structural stages used by species associated with mid-upper elevation old forest, single-story ponderosa pine, western larch, and whitebark pine have declined in geographic extent the

**Table 3-1. Forest Source Habitats.**

Increase Geographic Extent and Connectivity of These Cover Types and/or Structural Stages	Structure	Broad-scale Priority Areas (ERUs)	Broad-scale Priority Areas (RAC/PACs)
<b>Source Habitat for Terrestrial Families 1 and 2:</b> Low elevation, single story and multi-story old forest and mature forest with old-forest characteristics.			
Interior ponderosa pine	Single story	Northern Cascades Southern Cascades Upper Klamath Northern Great Basin Columbia Plateau Blue Mountains Northern Glaciated Mnts Lower Clark Fork Upper Clark Fork Owyhee Uplands Central Idaho Mountains	Yakima PAC Eastern Washington-Cascades PAC Eastern Washington RAC Deschutes PAC Southeast Oregon RAC Klamath PAC Upper Columbia-Salmon Clearwater RAC John Day RAC Butte RAC Upper Snake RAC  Lower Snake RAC
Interior ponderosa pine	Multi-story	Northern Cascades Southern Cascades Northern Glaciated Mnts Lower Clark Fork Upper Clark Fork Central Idaho Mountains	Yakima PAC Eastern Washington-Cascades PAC Eastern Washington RAC Deschutes PAC Butte RAC Upper Columbia-Salmon Clearwater RAC Lower Snake RAC
Western larch	Multi-story	Northern Cascades Southern Cascades Blue Mountains Northern Glaciated Mnts Lower Clark Fork Upper Clark Fork	Yakima PAC Eastern Washington-Cascades PAC Eastern Washington RAC Deschutes PAC John Day RAC Butte RAC Upper Columbia-Salmon Clearwater RAC
Aspen and cottonwood-willow cover type—structural stages	Multi-story	All ERUs	All RACs and PACs
<b>Source Habitat for Terrestrial Family 2:</b> Mid to upper elevation, single story and multi-story old forest and mature forest with old-forest characteristics			
Interior ponderosa pine	Single story	Northern Cascades Southern Cascades Upper Klamath Northern Great Basin Columbia Plateau Blue Mountains Northern Glaciated Mnts Lower Clark Fork Upper Clark Fork Owyhee Uplands Central Idaho Mountains	Yakima PAC Eastern Washington-Cascades PAC Eastern Washington RAC Deschutes PAC Southeast Oregon RAC Klamath PAC Upper Columbia-Salmon Clearwater RAC John Day RAC Butte RAC Upper Snake RAC Lower Snake RAC
Whitebark pine	Single story	Northern Cascades Southern Cascades	Yakima PAC Eastern Washington-Cascades PAC

**Table 3-1. Forest Source Habitats. (continued)**

Increase Geographic Extent and Connectivity of These Cover Types and/or Structural Stages	Structure	Broad-scale Priority Areas (ERUs)	Broad-scale Priority Areas (RAC/PACs)
		Upper Klamath Northern Great Basin Blue Mountains Northern Glaciated Mnts Lower Clark Fork Upper Clark Fork Owyhee Uplands Snake Headwaters Central Idaho Mountains	Eastern Washington RAC Deschutes PAC Southeast Oregon RAC Klamath PAC John Day RAC Upper Columbia-Salmon Clearwater RAC Butte RAC Upper Snake RAC Lower Snake RAC
Interior ponderosa pine	Multi-story	Northern Cascades Southern Cascades Northern Glaciated Mnts Lower Clark Fork Upper Clark Fork Central Idaho Mountains	Yakima PAC Eastern Washington-Cascades PAC Eastern Washington RAC Deschutes PAC Butte RAC Upper Columbia-Salmon Clearwater RAC Lower Snake RAC
Western larch	Multi-story	Northern Cascades Southern Cascades Blue Mountains Northern Glaciated Mnts Lower Clark Fork Upper Clark Fork	Yakima PAC Eastern Washington-Cascades PAC Eastern Washington RAC Deschutes PAC John Day RAC Butte RAC Upper Columbia-Salmon Clearwater RAC
Aspen and Cottonwood-willow cover type-structural stages	Multi-story	All ERUs	All RAC/PACs
Western White pine	Stand-initiation	Northern Glaciated Mnts Lower Clark Fork	Butte RAC Upper Columbia-Salmon Clearwater RAC Eastern Washington RAC
<b>Source Habitat for Terrestrial Families 2 and 4:</b>			
Interior ponderosa pine	Stand-initiation	Northern Cascades Southern Cascades Northern Great Basin Columbia Plateau Blue Mountains Northern Glaciated Mnts Lower Clark Fork Upper Clark Fork Owyhee Uplands Central Idaho Mountains	Yakima PAC Eastern Washington-Cascades PAC Eastern Washington RAC Deschutes PAC Southeast Oregon RAC Klamath PAC Upper Columbia-Salmon Clearwater RAC John Day RAC Butte RAC Upper Snake RAC Lower Snake RAC
Douglas-fir	Stand-initiation	Southern Cascades Upper Klamath Lower Clark Fork	Yakima PAC Deschutes PAC Southeast Oregon RAC

**Table 3-1. Forest Source Habitats. (continued)**

Increase Geographic Extent and Connectivity of These Cover Types and/or Structural Stages	Structure	Broad-scale Priority Areas (ERUs)	Broad-scale Priority Areas (RAC/PACs)
		Upper Clark Fork Central Idaho Mountains	Klamah PAC Butte RAC Upper Columbia-Salmon Clearwater RAC Lower Snake RAC
Western larch	Stand-initiation	Northern Cascades Northern Glaciated Mtns Lower Clark Fork Upper Clark Fork	Yakima PAC Eastern Washington-Cascades PAC Eastern Washington RAC Butte RAC Upper Columbia-Salmon Clearwater RAC
Lodgepole pine	Stand-initiation	Northern Great Basin Columbia Plateau Upper Klamath Northern Great Basin Northern Glaciated Mtns Lower Clark Fork Upper Clark Fork	Southeast Oregon RAC Eastern Washington RAC Deschutes PAC Yakima PAC Upper Columbia-Salmon Clearwater RAC John Day RAC Klamath PAC Butte RAC Upper Columbia-Salmon Clearwater RAC
<b>Source Habitat for Terrestrial Families 1, 2, and 4:</b>			
Aspen	Old forest; multi-story, unmanaged young forest; managed young forest; understory reinitiation; stem exclusion closed canopy; stand initiation	All ERUs	All RACs and PACs

Source: Hann, Jones, Karl, et al. 1997; Wisdom et al. in press.

most since historical times. Multi-story western larch, interior ponderosa, western white pine, and cottonwood-willow are also in decline (in geographic extent). Increasing the geographic extent of these late seral cover type-structural stages to levels closer to historical is one way to manage long-term risk of disturbance to terrestrial species and habitats. The most important components for Terrestrial Family 2 are old forest and snags, especially large snags. Loss of riparian woodlands, declines in riparian condition, and reductions in downed logs and coarse woody debris also have reduced terrestrial species popula-

tions. Other contributing factors include loss of large trees, aspen, and cottonwood-willow woodlands; and reduced longevity of early seral forest.

*Stand-initiation:* The stand-initiation structural stage is very important as habitat for a number of terrestrial species. Across the basin, stand-initiation forest types have declined since historical times. The western white pine stand-initiation cover type-structural stage has declined significantly, especially in the Lower Clark Fork ERU (see Map 2-1, in Chapter 2). The geographic extent of other cover types in the stand-

initiation structural stage did not consistently increase or decrease across any of the ERUs (this information was not assessed for RAC/PAC areas). Stand-initiation is often the shortest successional stage because of efficient regeneration efforts and rapid initial seedling growth. Continual recruitment of the stand-initiation stage is required to provide for the wildlife species that need this stage. It is desirable to increase the area of stand-initiation forest in subbasins where geographic extent of stand-initiation stage is less than desired. In other subbasins, disturbances may be managed so new openings in forest stands balance the amount of stand-initiation stage that matures into mid seral forest. Leaving large trees and snags in these openings, when possible, makes them more valuable to wildlife species that depend on a stand-initiation stage.

**R-G14. Guideline.** On sites dominated by ponderosa pine, Douglas-fir, and/or western larch, consider removing ladder fuels and reducing stand density to a level at which a fire cannot spread in the tree canopy consistent with landform, climate, and biological and physical characteristics of the ecosystem.

**R-G15. Guideline.** On sites where aspen is currently being replaced by conifers or where stem exclusion/closed canopy stages are declining in health, consider restoring seral stages dominated by aspen.

**R-G16. Guideline.** Consider restoring late seral structure in large blocks of habitat that are representative of the likely pattern that occurred with historical disturbance events.

**R-O17. Objective.** Increase the geographic extent of *interior ponderosa pine* cover type in the stem exclusion closed canopy structural stage in the following RAC/PAC areas: Yakima, Eastern Washington-Cascades, Eastern Washington, Deschutes, Southeast Oregon, Klamath, Upper Columbia/Salmon-Clearwater, John Day, Butte, Upper Snake, and Lower Snake where it is consistent with the landform, climate, and biological and physical characteristics of the ecosystem. Do this by converting from shade-tolerant cover types where they have taken over interior ponderosa pine stands and decreasing the geographic extent of managed young multi-story interior ponderosa pine in all RAC/PAC areas except the Lower Snake River, Upper Snake, and Klamath RACs.

**Rationale:** The ponderosa pine cover type has declined throughout the interior Columbia Basin (Hann, Jones, Karl, et al. 1997, Wisdom et al. in press). Some of the largest declines have taken place in the stem exclusion closed canopy structural stage, except in the Lower Snake and Upper Snake RAC areas where ponderosa pine is a small component, and the

Butte RAC area where the stem exclusion closed canopy structural stage has expanded since historical times. On the other hand, the managed young multi-story ponderosa pine forests, which did not exist until modern times, have become prevalent in all RAC/PAC areas except the Lower Snake River, Upper Snake, and Klamath RACs. Activities that change the managed young multi-story ponderosa pine forests to characteristics of stem exclusion closed canopy are appropriate where it is consistent with the landform, climate, and biological and physical characteristics of the ecosystem. Where these ponderosa pine forests have been converted to shade-tolerant species, it may be necessary to bring ponderosa pine back to the site through a stand-initiation stage.

The ponderosa pine stem exclusion closed canopy structural stage can be maintained through thinning and prescribed burning. However, it should not be maintained at any cost. The intent of this objective is that as this structural stage matures, it will develop old-forest characteristics and the structural stage will change to old forest single-story with lesser old forest multi-story.

This cover type-structural stage is used by Terrestrial Family 6 (forests, woodlands, and montane shrubs) and Terrestrial Family 7 (forest, woodlands, and sagebrush). It is one of two cover type-structural stages used by the seven Terrestrial Families which have shown a decline at the broad scale.

**R-O18. Objective.** In the moist forests of the Butte, Upper Columbia-Salmon Clearwater and Eastern Washington RAC/PACs increase the geographic extent of *western white pine*. Expand this cover type in the old forest multi-story, stem exclusion closed canopy, understory reinitiation, and stand-initiation structural stages (source habitat for Terrestrial Family 2). Continue to plant blister-rust-resistant stock and reduce competition to increase the abundance, genetic diversity, and distribution of these species.

**Rationale:** The western white pine cover type has declined 95 percent from historical to current periods because of timber harvest, wildfire suppression, and white pine blister rust. In the Butte, Upper Columbia/Salmon-Clearwater and Eastern Washington RACs, loss of western white pine has had a tremendous impact on the ecology of forest ecosystems, disturbance regimes, and wildlife species that use those habitats (Hann, Jones, Karl, et al. 1997; Wisdom et al. in press). These cover type-structural stages are used by Terrestrial Family 2 (old forest all elevation), Terrestrial Family 3 (forest mosaic), Terrestrial Family 5 (forest and rangeland mosaic), Terrestrial Family 6 (forests, woodlands, and montane shrubs), Terrestrial Family 7 (forest, woodlands, and sagebrush), and

Terrestrial Family 8 (rangeland and early and late seral forest).

**R-G17. Guideline.** To increase the overall abundance, diversity, and distribution of western white pine, or to restore its dominance where fire regimes would have encouraged it, consider a variety of techniques such as:

- ♦ Selecting and testing new candidate rust-resistant trees, and judiciously using lower levels of rust-resistance trees;
- ♦ Reducing mortality of infected pine through intermediate treatments such as pruning and canker excision;
- ♦ Minimizing selection pressure on fungus by conservative use of highly rust-resistant pine stock;
- ♦ Monitoring for new races of rust;
- ♦ Reducing competition and promoting more open stands which are less conducive to rust and spread; and
- ♦ Protecting existing stands.

**R-O19. Objective.** In cold forests, increase the geographic extent of *whitebark pine* where it is adapted (source habitat for Terrestrial Family 2). Plant blister rust resistant stock where available and reduce competition to increase the abundance, genetic diversity, and distribution of these species.

**Rationale:** Whitebark pine is an important component of some cold forest ecosystems in the project area and is a vital food source for several wildlife species. Whitebark pine has declined substantially from historical times because of wildfire suppression and white pine blister rust (Hann, Jones, Karl, et al. 1997; Wisdom et al. in press). This decline has had a negative impact on cold forest ecosystems, disturbance regimes, and the wildlife species that use cold forest habitat.

**R-G18. Guideline.** Consider the following techniques to reestablish whitebark pine and subalpine larch to desired ranges of abundance and distribution:

- ♦ Collecting seed from blister rust-resistant stock, and either sowing seeds or planting seedlings;
- ♦ Making grafts of resistant phenotypes and plants;
- ♦ Cross-breeding several blister rust-resistant trees;
- ♦ Artificially inoculating seedlings from rust-resistant or cross-bred stock;

- ♦ Increasing effectiveness of pruning and excising cankers in areas with moderate hazard;
- ♦ Monitoring for new races of blister rust;
- ♦ Reducing competition;
- ♦ Protecting existing stands.

**R-O20. Objective.** In *dry forest* PVGs, create open stands where the natural disturbance regime maintained open forests of Douglas-fir, ponderosa pine, western larch, or juniper, which will improve source habitat for Terrestrial Families 1, 2, and 4.

**Rationale:** Open stands should be more resilient to wildfire, insects, and disease and should help to restore hydrologic systems. Restoration actions may include prescribed and managed wildland fire, thinning, and harvest where these forests have dense, closed canopy conditions.

### **Rangelands Composition and Structure**

**R-O21. Objective.** Increase the geographic extent and connectivity of rangeland cover types and structural stages (terrestrial source habitats) that have declined substantially in geographic extent from the historical to the current period (see column 1 in Table 3-2) on sites where they can be sustained by the combination of landform, climate, and biological and physical characteristics. To achieve this, focus restoration management actions on decreasing the geographic extent of vegetation cover types and structural stages listed in column 2 of Table 3-2. These vegetation types have increased in geographic extent since the historical period and have contributed to declines in the source habitats that have decreased substantially since the historical period. Broad-scale priority RAC/PAC areas are identified in Table 3-2 for these restoration management actions.

**Rationale:** The Landscape Dynamics chapter (Hann, Jones, Karl, et al. 1997) of the *Assessment of Ecosystem Components* and Wisdom et al. (in press) provided information used to identify cover types and structural stages of terrestrial source habitats that declined substantially in geographic extent from the historical to the current period in the project area. Hann, Jones, Karl et al. (1997) also identified the most important changes from one cover type to another cover type that contributed to these declines. The decline in geographic extent of these cover types and structural stages was caused, in part, by increases in geographic extent of other cover types and structural stages. These changes can be caused by past management actions and land uses, such as fire suppression, excessive livestock grazing pressure, introduction

and spread of exotic plants, and urban and agricultural development. Such actions and land uses have led to the decline, and in some cases listing, of terrestrial species by reducing the available habitat necessary for maintaining their life cycles. Priority should be given to restoring whole hydrologic units, if resources are available and if the land base provides the opportunity.

Actions necessary to reduce the geographic extent and connectivity of cover types and structural stages listed in column 2 of Table 3-2 include but are not limited to: prescribed and wildland fire management; mechanical treatments (roto-mowing, thinning, harvest); weed control (chemical, mechanical, biological, and cultural); rehabilitation seedings. Follow-up management includes: livestock grazing modifications (season, timing, duration, frequency, intensity), fire management (reintroduce fire to some areas, suppress fire in other areas), and recreation management (all-terrain and other vehicles, people, and their recreation animals) to reduce the spread of weeds and disturbance to ecosystems.

**R-G19. Guideline.** Consider identification and delineation for management of juniper: (1) where it is encroaching but where native understory decline has not yet resulted; (2) where it has encroached and increased in density to a point where native understory has declined; and (3) where its density has increased to a point where all native understory vegetation has been displaced.

**R-G20. Guideline.** To reduce juniper seedlings and trees, consider implementing prescribed fire on sites where existing fuel levels are adequate to create flame lengths sufficient to kill juniper. Examples include: areas with more than one large juniper tree per acre capable of producing seed; or in dry shrub, dry grass, or cool shrub plant communities with juniper seedlings in the understory.

**R-G21. Guideline.** On sites where juniper density has increased to the point where understory native vegetation is declining or nearly all understory vegetation has been lost, consider a harvest (cutting or chaining) strategy that leaves slash on site. Consider saving large older trees.

**Rationale:** This should improve surface soil conditions and permit easier establishment and recovery of native or desired exotic understory vegetation, and to prevent excessive nutrient removal from these sites.

**R-G22. Guideline.** On sites where juniper is not dense enough to reduce understory vegetation,

consider enhancing plant and animal diversity by producing a western juniper-shrub-grassland type mosaic. Consider management that promotes western juniper stands characterized by a full complement of understory vascular and nonvascular vegetation.

**R-O22. Objective.** Increase the prevalence of Wyoming sagebrush in those seeded areas (for example, crested wheatgrass seedings) that are lacking in structure and are large enough to influence or decrease the connectivity of sagebrush within a subbasin scale. Achieve this by interseeding big sagebrush into these seedings, preferably during times (weather conditions) that are most conducive to sagebrush seeding establishment. Priority areas for this objective are the Southeastern Oregon RAC, Upper Snake RAC, and Lower Snake RAC (source habitat for Terrestrial Families 11 and 12.)

**Rationale:** Sagebrush cover types have declined more than any other cover type in the basin. Exotic forbs-annual grass cover types have replaced thousand of acres of the Wyoming big sagebrush cover type. In addition, agricultural and urban development have displaced the big sagebrush cover type (Landscape Dynamics chapter [Hann, Jones, Karl, et al. 1997]). In some cases, past rehabilitation efforts of rangeland areas have produced large areas of crested wheatgrass seedings. Some of these areas are lacking in structure and diversity, causing large disruptions in sagebrush cover type connectivity. One intent of this objective is to restore cover types that resemble structurally the big sagebrush cover type. This will increase patch size of the sagebrush cover types which will improve habitat conditions, provide source habitat for Terrestrial Families 11 and 12 (such as sage grouse, pygmy rabbit, and sage sparrow), and provide forage for livestock and other animals.

It is not the intent of this objective to add sagebrush to every crested wheatgrass seeding in the basin. Some seedings are of such small size that at the mid or broad scale they do not seriously affect connectivity of sagebrush cover types. This objective is focused on the larger seedings where sagebrush is lacking and where connectivity of sagebrush cover types is seriously affected. Deciding which seedings and how much sagebrush is needed should be determined during the subbasin or finer scale review processes.

Sagebrush must be seeded during favorable weather or climatic conditions to be successful. Therefore, multiple seeding attempts, over a period of several years, may be needed for achieving this objective.

**Table 3-2. Rangeland Source Habitats.<sup>1</sup>**

Increase geographic extent & connectivity of these cover types/structural stages	Decrease geographic extent and connectivity of these cover types/structural stages	In what situations	Broad-scale Priority Areas (RAC/PAC)
Source Habitat for Terrestrial Families 5,8,10,12: Fescue-bunchgrass (open hermland and closed hermland structural stages)	Exotic Forbs-Annual Grass  Interior Ponderosa Pine Interior Douglas-Fir	Where exotic undesirable plants have invaded and established into the fescue-bunchgrass cover type  Where ponderosa pine, Douglas-fir, and/or other trees associated with the interior ponderosa pine and Interior Douglas-fir cover types have encroached into the fescue-bunchgrass cover type and have increased in density, attributable singly or to the combination of fire suppression and excessive livestock grazing pressure.	All RAC/PACs  Butte RAC
Source Habitat for Terrestrial Families 3,5,8,10,12: Wheatgrass	Interior Ponderosa Pine Mixed-Conifer Woodlands	Where ponderosa pine, lodgepole pine, Douglas-fir, white fir, and/or other coniferous trees associated with the interior ponderosa pine and mixed-conifer woodlands cover types have encroached into the fescue-bunchgrass cover type and have increased in density, attributable singly or to the combination of fire suppression and excessive livestock grazing pressure	Klamath PAC
Source Habitat for Terrestrial Families 5,7,8,10,11,12: Mountain Big Sagebrush (open low-medium shrub structural stage)	Exotic Forbs-Annual Grass  Mountain Big Sagebrush Big Sagebrush	Where exotic undesirable plants have invaded and established into the wheatgrass bunchgrass cover type  Where mountain big sagebrush, big sagebrush, and/or other shrubs associated with the mountain big sagebrush and big sagebrush cover types have encroached into the wheatgrass bunchgrass cover type and have increased in abundance, attributable singly or to the combination of fire suppression and excessive livestock grazing pressure	All RAC/PACs  Lower Snake RAC Upper Snake RAC Upper Columbia-Salmon Clearwater - R4 RAC
Source Habitat for Terrestrial Families 5,7,8,10,11,12: Mountain Big Sagebrush (especially the open low-medium shrub structural stage)	Juniper/Sagebrush <sup>3</sup>	Where juniper (primarily western juniper) have encroached into the mountain big sagebrush cover type and have increased in density, attributable singly or to the combination of fire suppression and excessive livestock grazing pressure <sup>4</sup>	Yakima PAC E. Washington-Cascades PAC E. Washington RAC Southeastern Oregon RAC Klamath PAC Deschutes PAC Upper Columbia-Salmon Clearwater - R4 RAC John Day RAC Upper Snake RAC Lower Snake RAC
	Exotic Forbs-Annual Grass	Where exotic undesirable plants have invaded and established into the mountain big sagebrush cover type	Southeastern Oregon RAC Lower Snake RAC
	Interior Douglas-Fir	Where Douglas-fir and/or other trees associated with the Interior Douglas-fir cover type have encroached into the mountain big sagebrush cover type and have	Upper Snake RAC

<p><b>Source Habitat for Terrestrial Families 5,7,8,10,11,12:</b> Low Sage (open low-medium shrub structural stage)</p>	<p>Juniper/Sagebrush</p>	<p>increased in density, attributable singly or to the combination of fire suppression and excessive livestock grazing pressure</p> <p>Where juniper (primarily western juniper) have encroached into the low sage cover type and have increased in density, attributable singly or to the combination of fire suppression and excessive livestock grazing pressure<sup>4</sup></p>	<p>Klamath PAC</p>
<p><b>Source Habitat for Terrestrial Families 5,7,8,10,11,12:</b> Big Sagebrush (closed herbland, open low-medium shrub, and closed low-medium shrub structural stages)</p>	<p>Exotic Forbs-Annual Grass</p>	<p>Where exotic undesirable plants have invaded and established into the big sagebrush cover type</p>	<p>Yakima PAC E. Washington-Cascades PAC E. Washington RAC Southeastern Oregon RAC Klamath PAC Deschutes PAC Upper Columbia-Salmon Clearwater - R4 RAC John Day RAC Upper Snake RAC Lower Snake RAC</p>
<p><b>Source Habitat for Terrestrial Families 3,5,7,10,11:</b> Antelope Bitterbrush-Bluebunch Wheatgrass</p>	<p>Exotic Forbs-Annual Grass</p>	<p>Where exotic undesirable plants have invaded and established into the antelope bitterbrush-bluebunch wheatgrass cover type</p>	<p>E. Washington-Cascades PAC Yakima PAC E. Washington RAC John Day RAC Deschutes PAC Southeastern Oregon RAC Lower Snake RAC</p>
<p><b>Source Habitat for Terrestrial Families 5,7,10,11:</b> Salt Desert Shrub</p>	<p>Exotic Forbs-Annual Grass<sup>5</sup></p>	<p>Where exotic undesirable plants, especially cheatgrass, have invaded and established into the salt desert shrub cover type</p>	<p>Southeastern Oregon RAC Lower Snake RAC</p>

<sup>1</sup> The rangeland source habitats in this table includes herblands, shrublands, woodlands.

<sup>2</sup> Although seedlings of crested wheatgrass and other exotic grasses typically done on rangelands for rehabilitation after wildfire are included in the wheatgrass bunchgrass cover type (Hann, Jones, Karl et al. 1997 and Wisdom et al. in press), the intent of objective R-O21 is to focus on increasing the geographic extent and connectivity of the native bunchgrass species (such as bluebunch wheatgrass, Sandberg bluegrass, and Basin wildrye) within the wheatgrass bunchgrass cover type.

<sup>3</sup> The intent of objective R-O21 is not to reduce the geographic extent and connectivity of "old juniper woodlands" dominated by trees older than 150 years, that would typically be classified as the juniper woodlands cover type. The juniper woodlands cover type, in contrast to the juniper-sagebrush cover type, typically has an old tree component. The juniper woodlands cover type generally represents sites where juniper species are confined to rocky surfaces or ridges, with well-drained, shallow soils that produce relatively little understory herbaceous vegetation and have not burned frequently. The juniper-sagebrush cover type generally represents sites where juniper has expanded its range into herblands and/or shrublands, attributable singly or to the combination of fire suppression, excessive livestock grazing pressure, and climate (Karl and Leonard 1996; Hann, Jones, Karl et al. 1997).

<sup>4</sup> The intent of objective R-O21 is to reduce juniper by burning or appropriate harvest or cutting methods, before the increasing density of juniper begins to reduce the species diversity within the mountain big sagebrush or low sage cover type. This may require taking action before diversity problems are detected through monitoring. The risk is that waiting too long to start juniper control may allow deterioration of the understory to the point that natural regeneration of the original cover type may not be possible. Such delays may end up costing thousands of dollars to control invading exotic plants and to reestablish the native plant community. The focus should be on decreasing geographic extent and connectivity of juniper-sagebrush cover type where active fire suppression and/or livestock grazing have contributed to its expansion, rather than on juniper-sagebrush cover type that has expanded, or is expanding, solely because of climate.

<sup>5</sup> Rehabilitation in the salt desert shrub cover type is difficult to achieve currently. In most cases, the aridity of this cover type precludes reestablishment of desirable native species with current technology. It is the intent of objective R-O21 to concentrate on exotic and noxious plant control, with the hope that natural processes will allow reestablishment of the salt desert shrub plant species, until such time that technological improvements increase the success rate of rehabilitation efforts.

## **Aquatic/Riparian/Hydrologic Restoration**

### **Description and Management Intent**

Aquatic/riparian/hydrologic restoration direction refers to the reestablishment of watershed functions, processes, and structures, including natural diversity. The management intent of the ICBEMP watershed restoration direction is 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 integrity (such as in A1 and A2 subwatersheds); (2) extending favorable conditions into adjacent watersheds to create a larger or more contiguous network of suitable and productive habitats; and (3) restoring hydrologic processes to ensure favorable water quality conditions for aquatic, riparian, and municipal uses. Aquatic, riparian, and hydrologic restoration uses passive or active approaches, or a combination of both, to move toward objectives.

An important item to consider in the restoration and expansion of productive aquatic habitats and water quality is the spatial and temporal context of historical and current disturbance regimes. Historically, major disturbance regimes influenced the pattern and productivity of aquatic habitats within the project area. Past land management has changed disturbance regimes, leading to simplified aquatic habitats and declines in water quality in the project area. Geologic and climatic setting and changes in disturbance regimes present both opportunity and risk to land managers attempting to restore aquatic habitats and changed hydrologic processes.

The following restoration direction provides linkages to other restoration strategies that may be contained in: federal, state, and tribal water quality restoration priorities; and state and tribal aquatic species restoration plans (such as the Montana Bull Trout Plan).

Restoration management direction is presented in two subsections: aquatic/riparian restoration objectives, priorities, and issues; and water quality and hydrologic processes restoration. In most instances, there is a link among disrupted hydrologic processes, degraded water quality, and non-productive aquatic habitat. Therefore, the overall intent is to integrate both restoration needs (aquatic/riparian and hydrologic/water quality) to complement achievement of objectives wherever possible.

## **General Aquatic/Riparian Restoration**

The following objectives describe the general broad-scale intent of aquatic/riparian restoration within the project area. Attainment of these objectives will require decades. These objectives cannot be achieved in all areas because of physical (dams) and biological (exotic aquatic species) limitations.

**R-O23. Objective.** Restore connectivity within and among watersheds and networks of well-distributed high quality habitats that sustain populations of aquatic and riparian-dependent species.

**Rationale:** Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, groundwater sources, and streams. Effective network connections result in well-dispersed, high quality habitats that provide chemically and physically unobstructed routes to areas that are critical for fulfilling life history requirements of aquatic and riparian-dependent species through space and time.

**R-O24. Objective.** Restore instream and riparian habitat of sufficient quality, patch size, and distribution to support healthy populations of native fish and riparian-dependent species.

**Rationale:** It is critical to restore habitats that have been degraded to maintain riparian or wetland-dependent species. Emphasis should be placed on providing diversity in plant species and structure, such as shrubs and large trees, which occurred in the area historically.

**R-S6. Standard.** Proposed restoration activities shall be evaluated against measurable indicators to help determine consistency with RCA management objectives. Where there is concern with the proposed activity regarding any of the measurable indicators, NEPA analysis shall disclose how the activities will be modified or mitigated to alleviate the concern, or why the activity is needed to achieve RCA management objectives.

## **Aquatic/Riparian Restoration Priorities**

Broad-scale *aquatic* restoration priorities (see Map 3-3) were used to identify the broad-scale high restoration priority subbasins (see Maps 3-8 and 3-9) and to provide context for *finer scale* restoration priorities and approaches. Some finer scale restoration priorities (such as A2 subwatersheds) have been set because of

the urgency to secure habitats in the short term to support attainment of long-term broad-scale restoration objectives (see General Aquatic/Riparian Restoration Objectives). During Subbasin Review, the broad-scale and A2 subwatershed restoration priorities can be integrated to develop a mid-scale strategic approach to restoring aquatic/riparian resources, extending favorable conditions outward from A1 and A2 subwatersheds into adjacent subwatersheds to create a larger or more contiguous network of connected productive habitats.

**R-O25. Objective.** Use broad-scale aquatic/riparian restoration priorities and the geographic extent of the A1/A2 network during Subbasin Review to provide a broad-scale context when developing local long-term restoration priorities and approaches.

**Rationale:** Integrating the broad-scale aquatic/riparian priorities with the geographic extent of the A1/A2 network would provide context concerning the relative importance of aquatic resources within a particular subbasin compared to importance of those resources in the project area. This broad-scale context would help determine (a) the relative value of aquatic/riparian resources and contributions toward meeting broad-scale goals and objectives, and (b) whether aquatic conservation and restoration activities should receive high priority. This process would increase the likelihood of success of aquatic resource conservation and restoration actions.

**R-S7. Standard.** In relation to the broad-scale aquatic/riparian restoration priorities shown in Map 3-3, the following conceptual process shall be used during Subbasin Review to develop and identify a mid-scale strategic approach to aquatic/riparian restoration:

1. As discussed in R-O26, the first consideration for restoration activities is securing A2 subwatersheds and if needed A1 subwatersheds, or securing areas of high aquatic integrity or diversity if A1 or A2 subwatersheds are not present. In this instance, *securing* can mean either reducing threats within the subwatershed or reducing threats in adjacent subwatersheds that pose risks to the functionality of A2 or A1 subwatersheds.
2. The next logical aquatic/riparian restoration priority to be considered is subwatersheds or watersheds adjacent to A1 and A2 subwatersheds or areas of high aquatic integrity or diversity.

These areas should have a high potential to respond biologically and physically to restoration actions and result in expansion of diverse habitats.

3. The next logical sequence for aquatic-riparian restoration would be subwatersheds or watersheds that support spawning and rearing habitat (depressed levels) for native aquatic species that remain connected to larger portions of the subbasin. These areas would provide future important diverse habitats for native aquatic species.

**R-G23. Guideline.** Consider designing aquatic/riparian restoration actions to influence temporal and spatial diversity of productive aquatic habitat and key aspects of structure and function, such as channel morphology and hydrologic and sediment regimes; riparian vegetation condition and complexity; stream habitat complexity; and channel structure (that is, wood and bank stability).

**R-G24. Guideline.** Consider focusing aquatic/riparian restoration where a minimal investment can improve or secure the largest amount of productive habitat and diverse riparian-dependent species communities.

**R-G25. Guideline.** Consider conducting aquatic/riparian restoration first in areas where investments can provide economic and employment opportunities for local economically specialized and isolated and/or tribal communities.

**R-G26. Guideline.** When developing restoration strategies during Subbasin Review, consider identifying potential complementary opportunities that could occur over similar time frames and in similar areas and that could contribute toward attainment of multiple resource restoration objectives. For example, the need to restore forest conditions may coincide with the need to reduce adverse road effects on aquatic and riparian resources. Likewise, consider identifying potential conflicting restoration needs, and use available information to recommend approaches to minimize conflict while allowing attainment of restoration objectives. For example, consider alternative approaches to reduce negative impacts, such as increased maintenance or relocation of problematic segments, rather than obliterating or closing a road that has high social value but also causes negative effects on aquatic/riparian resources.

**R-G27. Guideline.** During the appropriate step-down process (programmatic planning, Subbasin Review, EAWS, or site-specific NEPA analysis), existing information, developed as part of the *Snake River Chinook and Sockeye Salmon; Snake River and Upper Columbia River Steelhead; and Klamath River, Columbia River, and Jarbidge River Bull Trout Biological Opinions* should be considered when developing restoration priorities.

**R-O26. Objective.** In the short term, the first consideration for aquatic/riparian restoration priorities is securing A2, and as needed, A1 subwatersheds from internal or adjacent subwatershed risks. If A1 or A2 subwatersheds are not present, then the first consideration is in areas of high aquatic integrity or diversity. Aquatic/riparian restoration efforts should focus on threatened or non-functioning watershed processes, addressing the causative agents while minimizing risks to functioning processes.

**Rationale:** A1 and A2 subwatersheds represent areas that support the strongest fish populations and highest native diversity and integrity. These subwatersheds serve as the foundation of a conservation strategy and a starting point for a restoration strategy. Strategically, securing these subwatersheds from internal or adjacent threats to watershed function and structure would enhance the short-term persistence of aquatic species and diversity and is necessary to ensure a source of individuals to colonize available habitats following natural recovery or restoration. The step-down process may reveal that the highest restoration priority may not be within A2 subwatersheds, but rather may be in adjacent subwatersheds whose condition poses a threat or represents a greater opportunity to expand productive aquatic habitats.

### Specific Aquatic/Riparian Restoration Issues

**R-O27. Objective.** Strategically, forest health restoration activities generally should occur in upland settings before treatment occurs in riparian areas. Treatments proposed in RCAs need to be consistent with RCA management objectives and standards.

**Rationale:** The delineation of ecologically appropriate RCAs and associated objectives and standards are presented in the Base Level, Aquatic/Riparian/Hydrologic Component section. The base level management direction provides for the maintenance or improvement of riparian conditions. Specific restoration treatments in RCAs may be necessary in some instances to restore function and connectivity

among streams, floodplains, and riparian areas. For example, in some forested landscapes, thinning and prescribed fire may be necessary to encourage development of large trees. In other instances there may be a need to thin trees that have encroached into riparian zones, to encourage shrub growth. Experience from treatment in upland settings can then be applied to RCAs where the primary emphasis is maintenance and restoration of riparian and aquatic functions. In these instances risks and trade-offs need to be well understood.

**R-G28. Guideline.** Consider the spatial and temporal role of natural disturbances within uplands and riparian areas in creating and maintaining high quality aquatic habitat. Consider vegetation management practices which restore and are compatible with spatial and temporal disturbance processes and patterns that encourage attainment of aquatic/riparian/hydrologic management objectives.

**R-O28. Objective.** When identifying restoration opportunities, evaluate the distribution of non-native aquatic species and how restoration efforts may change their distribution.

**Rationale:** The introduction and widespread expansion of non-native aquatic species have contributed to the decline in native aquatic species. The intent of this objective is to identify restoration efforts that could further change the distribution of non-native aquatic species. For example: removing a culvert that represents a migratory barrier to native fish could allow expansion of non-native species if they are currently present below the barrier.

**R-O29. Objective.** When proposed restoration actions could affect the distribution of non-native species, provide opportunities to states, tribes, or other federal partners to address non-native aquatic species issues under existing MOUs.

**R-G29. Guideline.** Consider working with federal, tribal, and state fish management agencies to identify and reduce negative effects on aquatic resources associated with fish stocking, fish harvest, habitat manipulation, and poaching.

**R-O30. Objective.** Initiate collaboration on and cooperation with other landowners when addressing similar aquatic/riparian restoration issues.

**Rationale:** Historically, many productive aquatic habitats existed in rivers downstream or adjacent to present BLM- or Forest Service-administered lands. Opportunities may exist to cooperatively address watershed restoration needs with adjacent landown-

ers. The intent is to stimulate cooperative restoration activities, not to extend federal land management direction to adjacent ownerships.

**R-G30. Guideline.** Consider cooperative aquatic/riparian restoration actions with adjacent landowners, particularly in low-elevation floodplain river systems.

**R-G31. Guideline.** When developing land acquisition and/or proposals, exchange, and conservation easements, consider the benefits and tradeoffs of attaining aquatic and riparian objectives.

## Water Quality and Hydrologic Process Restoration

Episodic climatic, geomorphic, and hydrologic processes determine the supply, storage, and transport of water, sediment, and wood, and they shape many aspects of terrestrial and aquatic habitats. These dynamic processes display patterns (across the landscape and through time) of water, sediment, and wood, as well as channel and valley characteristics throughout entire watershed networks. These patterns are best characterized in terms of frequencies of distributions. Effective restoration of hydrologic processes and water quality over the long term must provide for a full range of natural variability in these patterns and characteristics and must also account for their dynamic nature.

In addition, restoration must include in-channel, riparian, and upslope components to achieve sustainable intact watersheds and ecosystems. Restoration and maintenance of hydrologic processes and prevention of pollution are the main steps to ensuring water quality that is at potential and will support beneficial uses of the water. Restoration of riparian vegetation, soils, and soil processes is particularly important for successful restoration of water quality because of the buffering soils provide to streams. In addition to other Forest Service/BLM mandates for good land stewardship, the Clean Water Act also mandates federal land management agencies to restore and protect the quality of public waters under their jurisdictions.

The mid scale (subbasin[s] and/or basin[s]) is needed to describe climatic and landscape processes which determine the types of hydrologic and water quality conditions that exist and can be expected. Mid-scale information can also help determine priorities for further analysis and general recommendations that would result in effective restoration strategies. Subbasins needing water quality restoration have been identified and prioritized on a state-by-state

basis as part of Clean Water Action Plan (CWAP) implementation strategies. These strategies vary somewhat by scale, processes, and information, but they achieve an overall initial priority for CWAP restoration funding. In some states, legal decisions mandate restoration of water quality in subbasins according to the respective state's 303(d) lists and Total Maximum Daily Load (TMDL) schedules. The ICBEMP Broad-scale Restoration Strategy (Appendix 15) provides a list of subbasins with restoration needs that incorporate 303(d) listed waterbodies and departure of hydrologic processes from historical regimes (see also Map 3-4).

Additional direction on restoration of hydrologic processes and hydrologically driven disturbance regimes is located in the Landscape Restoration section.

**R-O31. Objective.** Restore water quality, water quantity, and hydrologic processes necessary to support healthy riparian, aquatic, and wetland ecosystems. These processes should be restored to be within the range of variability representative of the inherent capability of the watershed area, and maintained within that range over time.

**Rationale:** The processes that determine water quality, water quantity and hydrologic condition are not static but vary within a stream system through space and time. Ranges of conditions are difficult to define because the variation is influenced by many things, including climate, both natural and human-caused disturbances within the watershed, and the natural capability determined by the specific geomorphic characteristics of the stream and surrounding watershed. The intent is to restore these processes to frequencies and distributions that are consistent with natural patterns characteristic of geomorphically similar watershed areas.

**R-G32. Guideline.** When conducting EAWS, consider using the information to provide context for setting hydrologic restoration priorities. Diagnose causal mechanisms and events of modified hydrologic processes leading to degraded watershed conditions and appraise various restoration techniques.

**R-S8. Standard.** The 303(d) list, state priorities for TMDL development, and existing water quality restoration plans shall be incorporated into Subbasin Review and into Ecosystem Analysis at the Watershed Scale where EAWS is being accomplished.

**Rationale:** Subbasin Review will be completed for the ICBEMP within five years of signing of the ROD. States within the ICBEMP are developing TMDLs at a subbasin scale. Much of the area within the ICBEMP

will also have Ecosystem Analysis at the Watershed Scale scheduled or completed during this same timeframe. The intent of this standard is to coordinate and integrate broad-, mid-, and watershed-scale information and timelines with state and EPA information and timelines, at similar scales of analysis, to maximize cost-benefit and efficiency of restoration efforts.

**R-S79. Standard.** State, county, and tribal water quality restoration priorities shall be considered early in the process of Subbasin Review, Ecosystem Analysis at the Watershed Scale, and/or site-specific NEPA analyses and decisions.

**R-O32. Objective.** Develop and implement water quality restoration plans for all impaired water bodies on Forest Service- and BLM-administered lands by scheduling and implementing the 303(d) protocol at a scale and with time frames that complement state processes and schedules for total maximum daily load (TMDL) development and implementation.

**Rationale:** Each state has established schedules for development and implementation of TMDLs for waters that have been listed under Section 303(d) of the Clean Water Act (CWA). Such schedules have been or will be accepted by the courts and/or EPA as satisfying CWA requirements for addressing such listed waters. The Forest Service and BLM will retain maximum decision flexibility by self-determining the extent to which activities on lands under their administration affect such listed waters and by developing specific plans that define how such impacts will be addressed so as to restore such waters. The 303(d) protocol was designed to facilitate accomplishment of this objective. The intent of this objective is to take full advantage of partnerships as Clean Water Action Plan (CWAP) implementation evolves and to accomplish restoration using a collaborative watershed-basin approach.

**R-O33. Objective.** Use existing Memoranda of Understanding (MOUs) with state water quality agencies to initiate partnerships with other federal, state, county, and tribal organizations, watershed councils, private citizens, and non-federal land owners, to maximize the benefits of existing efforts for water quality protection and restoration. Implement restoration in an integrated manner, including cost sharing wherever possible. Also see objective *B-O41* under Base Level Direction.

**Rationale:** Other federal and state agencies, tribes, counties, and interested stakeholders within the project area have developed or are in the process of developing water quality restoration plans. Many of these efforts are striving to accomplish similar out-

comes. The greatest benefits and returns on investments can be obtained where mutual priorities or opportunities can provide a pool of resources to more effectively implement restoration actions.

**R-G33. Guideline.** Consider cooperating with state water quality agencies when they monitor, review, and compare existing conditions to State Water Quality Standards.

**Rationale:** It is during their monitoring, review, and determination that the state water quality agencies identify the status of water quality and the risk to beneficial uses of water.

## **Social–Economic–Tribal Component: Restoration**

### **Description and Management Intent**

The social–economic–tribal restoration component highlights areas where restoration activities have a direct influence on human community economic, social, and cultural needs. This direction is inextricably linked to restoration direction provided in the landscape dynamics, terrestrial, and aquatic/riparian/hydrologic sections. The following direction relates specifically to considerations for designing and implementing restoration activities in ways that promote workforce participation, serve demands for commodity products at various levels, encourage intergovernmental collaboration, and consider tribal needs and interests.

**R-O34. Objective.** When promoting the economic participation of the local workforce in restoration activities, give highest priority to nearby rural communities or geographic areas that are less economically diverse and more economically associated with outputs of goods and services from Forest Service- and BLM-administered lands. These places are referred to in this EIS as “Areas of Economic Specialization” (see Map 2-33, in Chapter 2). For restoration opportunities to assist isolated and economically specialized communities and tribal communities, see Maps 3-6 and 3-7, and Table 3-3. See also objective *B-O58* in the Base Level direction section.

**Rationale:** The intent of this objective is to help sustain isolated, economically specialized communities while they transition to a less specialized condition. It is not intended to discourage or mask the need for economic diversification or other economic development efforts. The objective stems from the recognition that few economic options are available in these areas, that BLM and Forest Service actions may

**Table 3-3. Communities with Tribal Headquarters.**

Tribal Community	Tribal Government
Browning, Montana	Blackfeet Tribe
Burns, Oregon	Burns Paiute Tribe
Plummer, Idaho	Coeur d'Alene Tribe
Nespelem, Washington	Colville Tribe
Fort Bidwell, California	Fort Bidwell Indian Community
McDermitt, Nevada	Ft. McDermitt Paiute Shoshone Tribes
Usk, Washington	Kalispel Tribe
Chiloquin, Oregon	Klamath Tribe
Bonners Ferry, Idaho	Kootenai Tribe of Idaho
Lapwai, Idaho	Nez Perce Tribe
Blackfoot, Idaho	Northwest Band of Shoshoni Nation
Burney, California	Pit River Tribe
Fort Jones, California	Quartz Valley Indian Community
Pablo, Montana	Confederated Salish and Kootenai Tribes
Fort Washakie, Wyoming	Shoshone Tribe of Wind River
Fort Hall, Idaho	Shoshone-Bannock Tribes
Owyhee, Nevada	Shoshone-Paiute Tribes
Wellpinit, Washington	Spokane Tribe
Winnemucca, Nevada	Summit Lake Paiute Tribes
Pendleton, Oregon	Umatilla Tribe
Warm Springs, Oregon	Warm Springs Tribes
Toppenish, Washington	Yakama Nation

be able to contribute to community vitality, and that the continued existence and vitality of these areas is in the public interest. Maps 3-8 and 3-9 show 15 and 21 subbasins for Alternative S2 and S3, respectively, that were identified as restoration priorities because they have high risk to aquatic and terrestrial species and habitats from natural disturbance, and good opportunity to reduce those risks through restoration activities, and because they provide employment and economic opportunities for isolated and economically specialized communities. For more information on how Areas of Economic were measured, see the *Economic and Social Conditions of Communities* (ICBEMP 1998) and the Restoration Appendix (Appendix 15).

**R-O35. Objective.** While designing management activities to meet restoration objectives, make commodity products available for purchase, to the extent possible:

1. to support economic activity important to rural and tribal communities and local governments,
2. to maximize regional market efficiencies, and
3. to achieve restoration objectives in an efficient and cost effective way. See also objective B-O64 in the Base Level management direction section.

**Rationale:** The commercial use of Forest Service- and BLM-administered land resources can provide social, economic, and cultural benefits to society that are compatible with an ecosystem restoration management emphasis.

**R-O36. Objective.** Collaborate with affected federally recognized tribes to identify restoration opportunities and possible cooperative restoration approaches or actions. Emphasize restoration activities on Forest Service- and BLM-administered lands in subbasins that are near or contain tribal communities which are less economically diverse and have greater need for economic stimulus (see Table 3-3 for a list of these tribal communities). See the broad-scale tribal restoration priority subbasins, shown in Map 3-7, and objective B-O57(S2) in the Base Level management direction section.

**Rationale:** This objective has a strong emphasis on identifying high restoration priority subbasins near isolated and economically specialized communities. Maps 3-8 and 3-9 show 11 and 16 subbasins that were identified as restoration priorities for Alternatives S2 and S3, respectively, because they have high risk to aquatic and terrestrial species and habitats from

natural disturbance, they have good opportunity to reduce those risks through restoration activities, and because they provide employment and economic opportunities in tribal communities (see Table 3-3 for a list of these tribal communities). There is also high likelihood that resources associated with the rights and interests of federally recognized tribes will be available in these areas.

**R-S10. Standard.** When conducting Subbasin Review, EAWS, or applicable site-specific NEPA analysis, collaborate with affected federally recognized tribes and solicit tribally identified restoration opportunities. When possible, accomplish restoration objectives that also address restoration of resource values of importance to federally recognized tribes.

**Rationale:** Consultation with the tribes may help identify ways to accomplish restoration objectives and at the same time enhance resource values for species of interest to tribes. For example, a tribe might directly benefit from cooperative restoration of a traditional camas-gathering area. In another case, shrubland restoration might provide an indirect benefit if forbs and shrubs of special interest to tribes could be targeted for inclusion in the seeding mixture. Collaborating with tribes during site-specific NEPA analysis is only required if the proposed action relates to resources of interest to the tribes.

**R-S11. Standard.** Cooperate with tribal efforts regarding research and restoration of treaty/trust resources (for example, habitat re-establishment of salmon in Columbia River tributaries, mule deer in the Klamath Basin, and antelope in eastern Idaho). During EAWS, Subbasin Review, or site-specific NEPA analysis, specifically consider for protection and restoration treaty resources within tribe's areas of interest or ceded lands.

**R-S12. Standard.** Congruent with achieving restoration objectives, collaborate with federally recognized tribes to design restorative actions that mitigate possible negative effects on resources of interest to tribes.

**Rationale:** If the agencies discuss and understand tribal needs, numerous ways exist to accommodate the rights and interests of tribes while still accomplishing resource management objectives. For example, the timing of agency actions can be a significant mechanism for accommodation, because many tribal uses are seasonal in nature.

**R-G34. Guideline.** Consider historically occupied habitats in traditional use areas for restoration of resources/species of interest to tribes. Implementation guidance for Subbasin Review includes ex-

amples/possible questions that may help focus restoration discussions. Consider the list of culturally significant plant species (Appendix 8) as a starting point for collaborative discussion with the tribes, as well as the scientific assessment of big game species as they relate to tribes (Lehmkuhl and Kie 1999).

## Management Direction — Terrestrial T Watersheds

### Description and Management Intent

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*T watersheds alone do not constitute a network of habitats for terrestrial species. However, they are one piece of the overall strategy to maintain and restore networks of habitat for terrestrial species.*

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Terrestrial T watersheds (5th-field HUCs), shown on Map 3-10 were identified based on whether they contained source habitat for one or more of 5 “families” of terrestrial species, which are a subset of 12 “families” described in Wisdom et al. (in press). These five families represent groups of species associated with habitats that have *declined substantially in the project area* since historical times. In addition, the pattern of source habitats within these watersheds is most similar to that found historically. The 5 Terrestrial Families and associated species are shown in a sidebar in the Terrestrial Source Habitat Component section of the Base Level Direction. T watersheds alone do not constitute a network of habitats for terrestrial species. However, they are one piece of the overall strategy to maintain and restore networks of habitat for terrestrial species.

T watersheds contain source habitats that are relatively similar in pattern across the landscape compared with historical vegetation patterns (that is, they have *low departure* from historical patterns). To have been selected, T watersheds must have had at least 5 percent BLM- and/or Forest Service-administered lands, although the overwhelming majority of watersheds selected contain more than 80 percent BLM- and/or Forest Service-administered lands. While every acre of source habitat within T watersheds is not necessarily of highest quality, T source habitats can be considered the *most sustainable through time* compared to source habitats in other watersheds.



**Map 3-10. Terrestrial (T) Watersheds, Alternatives S2 and S3.**

Source habitats within T watersheds: (1) generally have intact functions and processes (such as plant succession); frequency and severity of disturbance (such as fire, grazing, insects, and disease) that are characteristic for the area; nutrient cycling and energy flow; and (2) generally have certain habitat components (such as large snags, absence of exotic species, and low predicted road densities) that are associated with the low departure from historical patterns.

As used in this EIS, source habitats are the vegetation cover types and structural stages that contribute to stable species populations or population growth in a specified area and time. A species will normally require several source habitats to provide for stable populations or population growth. Each distinct vegetation cover type represents a complex of plant species and groups with similar characteristics. Each cover type can have one to several structural stages (that is, stages of structural development). Source habitats as used here support long-term population persistence (Wisdom et al. in press).

The two-fold (short term and long term) intent of management in T watersheds recognizes that source habitat(s) are not static and that preventing loss of source habitat relates to the whole watershed, not just to a site-specific situation. The intents for management in T watersheds are as follows:

1. In the short term (10 years), T watershed direction has a conservation emphasis. Source habitats that have declined substantially in geographic extent from the historical to the current period in most of the RAC/PAC areas where they existed historically, and those with old-forest characteristics, should be maintained or secured. The short-term intent includes preventing further loss of geographic extent and decline in condition of source habitats that have declined substantially from the historical to the current period. This loss or decline could be caused either by land uses (for example, livestock grazing pressure that exceeds what the cover types can tolerate) or by management actions that collectively or individually would fragment source habitat(s) within and across landscapes and diminish the condition of source habitat(s). Restoration is focused primarily on securing the source habitat, by preventing invasion by noxious weeds, for example.
2. In the long term (more than 10 years), T watershed direction is intended to (a) recruit additional source habitats that have declined substantially in geographic extent from the historical to the current period, to increase their geographic extent and connectivity within the watershed where possible (that is, where they can be sustained by

the combination of landform, climate, and biological and physical characteristics); and (b) repattern source habitats on the landscape where and when necessary (see explanation below). The short-term conservation-oriented focus takes precedence over the long-term restoration-oriented focus. Source habitats that have not declined substantially and/or non-source habitats (relative to the five Terrestrial Families) could be manipulated through management actions or natural succession to expand their geographic extent and connectivity and/or to repattern source habitats.

The expectation is that management actions—such as weed control, thinning, prescribed burning, and altered livestock grazing management strategies—will be used as needed to maintain, secure, and restore source habitats. Although the patterns of source habitats in T watersheds are expected to be relatively similar to the historical vegetation patterns, in some cases source habitats will need to be repatterned. For example, restoration of source habitats might require conversion of one source habitat to another (such as from juniper-sagebrush-woodland to mountain big sagebrush-open low-medium shrub). Land uses, such as livestock grazing and timber harvest, are allowed if they are consistent with the objectives and management intent for T watersheds.

Objectives and standards for T watersheds apply only to the source habitat(s) listed in objective T-O1 that occur within the watersheds. These objectives and standards can be superseded only by direction for A1 subwatersheds. If there are other management conflicts, then direction for T watersheds would be followed. Management direction in Restoration and Base Level applies to T watersheds, but direction for source habitats in T watersheds provides the context within which the Restoration and Base Level Management Direction must be implemented.

**T-O1. Objective.** In the short term, maintain and secure terrestrial source habitats that have declined substantially in geographic extent from the historical to the current period and source habitats that have old-forest characteristics. In the long term, repattern source habitats where and when necessary by focusing on the *entire* set of source habitats (cover types and structural stages) listed within each of the five Terrestrial Families in Tables 3-4 to 3-8 (Terrestrial Families 1, 2, 4, 11, and 12). In the long term, facilitate the persistence and expand the geographic extent and connectivity of source habitats that have declined substantially where they can be sustained by the combination of landform, climate, and biological and physical characteristics. Prior to conducting management actions within the source habitats that have not

declined substantially in geographic extent, evaluate the effects of the action on pertinent species within the five Terrestrial Families to minimize short-term risk to the continued persistence of the species.

**Rationale:** The intent of this objective is described above in the Description and Management Intent section. Source habitats for the five Terrestrial Families are emphasized because the geographic extent of many of them have declined substantially in the project area between the historical and current period; additional source habitats that have declined substantially are also included for the remaining seven Terrestrial Families (see Table 3-9). A critical premise of the intent of management direction for T watersheds is that short- and long-term conservation of source habitats that have declined substantially and long-term restoration of the pattern of source habitats will help achieve long-term viability of terrestrial species. The T watersheds were identified with the purpose of being used as “anchor points” in the short term, and for the long-term creation of a well-distributed network of secure and productive habitats, which should ensure the long-term survival of populations or species.

**T-O2. Objective.** Maintain habitats by permitting natural processes, including disturbance events, such as fire, to continue whenever these processes will contribute to long-term sustainability of habitat.

**Rationale:** Disturbance processes, such as fire, can help maintain watershed qualities. Attempts to exclude these processes, such as with fire suppression, may have long-term detrimental consequences (for example, changes in vegetation and successional dynamics, and direct effects of fire suppression itself). “Wildland fire use for resource benefit” and prescribed fire both require extensive planning and documentation and must meet NEPA and agency requirements.

**T-S1. Standard.** Management activities and land uses (conducted subject to valid existing rights), individually or collectively, shall be consistent with achievement of Objectives T-O1 and T-O2.

**Rationale:** Example 1: There might be cases where a prescribed burn in source habitat might be necessary and desirable to maintain and secure it (for example,

**Table 3-4. Terrestrial Family 1 — Old Forest, Low Elevation Source Habitat.**

Cover Type	Structural Stage
Interior ponderosa pine <sup>1</sup>	Old forest, single and multi-story <sup>1</sup> Managed young multi-story Unmanaged young multi-story
Interior Douglas-fir	Old forest, multi-story
Western larch <sup>1</sup>	Old forest, multi-story <sup>1</sup>
Aspen <sup>1</sup>	Old forest, multi-story <sup>1</sup>
Cottonwood-willow <sup>1</sup>	Old forest, multi-story <sup>1</sup> Managed young multi-story Unmanaged young multi-story
Sierra Nevada mixed-conifer <sup>1</sup>	Old forest, single story Old forest, multi-story <sup>1</sup>
Pacific ponderosa pine <sup>1</sup>	Old forest, single story Old forest, multi-story <sup>1</sup>
Oregon white oak	Woodland <sup>1</sup>

<sup>1</sup> Source habitats that have declined substantially in geographic extent from the historical to the current period.

**Table 3-5. Terrestrial Family 2 — Old Forest, Broad Elevation Source Habitat.**

<b>Cover Type</b>	<b>Structural Stage</b>
Whitebark pine <sup>1</sup>	Old forest, single story Old forest, multi-story <sup>1</sup> Unmanaged young multi-story <sup>1</sup> Understory reinitiation <sup>1</sup>
Whitebark pine-alpine larch <sup>1</sup>	Understory reinitiation <sup>1</sup> Unmanaged young multi-story <sup>1</sup> Old forest, multi-story <sup>1</sup>
Engelmann spruce-subalpine fir <sup>1</sup>	Old forest, multi-story <sup>1</sup> Unmanaged young multi-story <sup>1</sup> Stand initiation Understory reinitiation
Interior Douglas-fir	Old forest, single and multi-story Stand initiation Understory reinitiation Unmanaged young multi-story
Western larch <sup>1</sup>	Old forest, single story <sup>1</sup> Old forest, multi-story <sup>1</sup> Stand initiation <sup>1</sup> Understory reinitiation Unmanaged young multi-story <sup>1</sup>
Lodgepole pine <sup>1</sup>	Unmanaged young multi-story Managed young multi-story Stand initiation <sup>1</sup> Understory reinitiation Old forest, single story <sup>1</sup> Old forest, multi-story
Aspen <sup>1</sup>	Old forest, multi-story <sup>1</sup> Understory reinitiation <sup>1</sup> Stand initiation Unmanaged young multi-story
Grand fir-white fir	Old forest, single and multi-story Stand initiation Understory reinitiation Unmanaged young multi-story
Western white pine <sup>1</sup>	Old forest, multi-story <sup>1</sup> Old forest, single story Understory reinitiation <sup>1</sup> Stand initiation <sup>1</sup> Unmanaged young multi-story
Interior ponderosa pine <sup>1</sup>	Old forest, single and multi-story <sup>1</sup> Stand initiation <sup>1</sup> Stem exclusion open canopy Understory reinitiation Unmanaged young multi-story

**Table 3-5. Terrestrial Family 2 — Old Forest, Broad Elevation Source Habitat.  
(continued)**

Cover Type	Structural Stage
Cottonwood-willow <sup>1</sup>	Old forest, multi-story <sup>1</sup> Stand initiation <sup>1</sup> Unmanaged young multi-story
Mixed-conifer woodlands <sup>1</sup>	Woodland <sup>1</sup>
Mountain hemlock <sup>1</sup>	Stand initiation Understory reinitiation Unmanaged young multi-story Old forest, single story Old forest, multi-story <sup>1</sup>
Pacific silver fir-mountain hemlock	Stand initiation Understory reinitiation Unmanaged young multi-story Old forest, multi-story
Western redcedar-western hemlock <sup>1</sup>	Stand initiation Understory reinitiation Unmanaged young multi-story <sup>1</sup> Old forest, single and multi-story
Red fir	Stand initiation Understory reinitiation Unmanaged young multi-story Old forest, multi-story
Sierra Nevada mixed-conifer <sup>1</sup>	Stand initiation Understory reinitiation <sup>1</sup> Unmanaged young multi-story Old forest, single story Old forest, multi-story <sup>1</sup>
Pacific ponderosa pine <sup>1</sup>	Stand initiation Understory reinitiation Unmanaged young multi-story Old forest, single story Old forest, multi-story <sup>1</sup>
Limber pine	Woodland
Shrub or herb-tree regen	Closed herbland Open low-medium shrub Closed low-medium shrub
Chokecherry-serviceberry-rose <sup>1</sup>	Open low-medium shrub Closed low-medium shrub <sup>1</sup> Open tall shrub

<sup>1</sup> Source habitats that have declined substantially in geographic extent from the historical to the current period.

**Table 3-6. Terrestrial Family 4 — Early-seral Forest Source Habitat.**

Cover Type	Structural Stage
Interior ponderosa pine <sup>1</sup>	Stand initiation <sup>1</sup>
Interior Douglas-fir	Stand initiation
Western larch <sup>1</sup>	Stand initiation <sup>1</sup>
Aspen	Stand initiation
Cottonwood - willow <sup>1</sup>	Stand initiation <sup>1</sup>
Engelmann spruce-subalpine fir	Stand initiation
Lodgepole pine <sup>1</sup>	Stand initiation <sup>1</sup>
Grand fir-white fir	Stand initiation
Chokecherry-serviceberry-rose <sup>1</sup>	Open low-medium shrub Closed low-medium shrub <sup>1</sup> Open tall shrub

<sup>1</sup> Source habitats that have declined substantially in geographic extent from the historical to the current period.

**Table 3-7. Terrestrial Family 11 - Sagebrush Source Habitat.**

Cover Type	Structural Stage
Mountain big sagebrush <sup>1</sup>	Open low-medium shrub <sup>1</sup> Closed low-medium shrub
Big sagebrush <sup>1</sup>	Closed herbland <sup>1</sup> Open low-medium shrub <sup>1</sup> Closed low-medium shrub <sup>1</sup>
Low sage	Open low-medium shrub Closed low-medium shrub
Salt desert shrub	Open low-medium shrub Closed low-medium shrub
Antelope bitterbrush-bluebunch wheatgrass <sup>1</sup>	Closed low-medium shrub <sup>1</sup>
Juniper woodlands	Woodland
Juniper-sagebrush	Woodland
Mixed-conifer woodlands <sup>1</sup>	Woodland <sup>1</sup>
Herbaceous wetlands	Open herbland Closed herbland
Chokecherry-serviceberry-rose <sup>1</sup>	Open low-medium shrub Closed low-medium shrub <sup>1</sup> Open tall shrub
Mountain mahogany <sup>1</sup>	Open low-medium shrub <sup>1</sup> Closed low-medium shrub

<sup>1</sup> Source habitats that have declined substantially in geographic extent from the historical to the current period.

**Table 3-8. Terrestrial Family 12 - Grassland and Open-canopied Sagebrush Source Habitat.**

Cover Type	Structural Stage
Mountain big sagebrush <sup>1</sup>	Open low-medium shrub <sup>1</sup>
Big sagebrush <sup>1</sup>	Closed herbland <sup>1</sup> Open low-medium shrub <sup>1</sup>
Low sage	Open low-medium shrub
Fescue-bunchgrass <sup>1</sup>	Open herbland <sup>1</sup> Closed herbland <sup>1</sup>
Wheatgrass bunchgrass <sup>1</sup>	Open herbland <sup>1</sup> Closed herbland <sup>1</sup>
Shrub wetlands <sup>1</sup>	Open low-medium shrub <sup>1</sup> Closed low-medium shrub Closed tall shrub <sup>1</sup> Open herbland Closed herbland
Herbaceous wetlands	Open herbland Closed herbland
Native forb	Open herbland Closed herbland
Chokecherry-serviceberry-rose <sup>1</sup>	Open low-medium shrub Closed low-medium shrub <sup>1</sup> Open tall shrub

<sup>1</sup> Source habitats that have declined substantially in geographic extent from the historical to the current period.

**Table 3-9. Terrestrial Families 3, 5, 6, 7, 8, 9, and 10.**

Cover Type	Structural Stage
Western white pine <sup>1</sup>	Stem exclusion closed canopy <sup>1</sup>
Interior ponderosa pine <sup>1</sup>	Stem exclusion closed canopy <sup>1</sup>
Alpine tundra <sup>1</sup>	Closed low-medium shrub <sup>1</sup>
Whitebark pine-alpine larch <sup>1</sup>	Stand initiation <sup>1</sup> Stem exclusion open canopy <sup>1</sup> Managed young multi-story <sup>1</sup>
Whitebark pine <sup>1</sup>	Stand initiation <sup>1</sup> Stem exclusion open canopy <sup>1</sup>
Interior Douglas-fir <sup>1</sup>	Stem exclusion open canopy <sup>1</sup>
Sierra Nevada mixed-conifer <sup>1</sup>	Stem exclusion open canopy <sup>1</sup>
Pacific ponderosa pine <sup>1</sup>	Stem exclusion open canopy <sup>1</sup>
Cottonwood-willow <sup>1</sup>	Understory reinitiation <sup>1</sup>

<sup>1</sup> Source habitats that have declined substantially in geographic extent from the historical to the current period.

burning sagebrush to prevent invasion of western juniper). This might be an appropriate restoration management action to do in a T watershed; however, a possible consequence is that noxious weeds, such as medusahead, might invade after a prescribed burn because the prescribed burn made the site more susceptible to noxious weed invasion. The prescribed burn action could still be approved, but then another action, weed control, would have to be implemented.

Example 2: Where livestock grazing has not resulted in a loss of geographic extent or decline in the condition of source habitat, livestock grazing may continue as currently implemented. On the other hand, livestock grazing would have to be modified or eliminated where excessive livestock grazing pressure has contributed to a decline in source habitat (for example, livestock grazing that has caused increases in tree density in dry forest types, resulting in a loss of low elevation old forest source habitat [Terrestrial Family 1]).

**T-S2. Standard.** For land uses conducted pursuant to valid existing rights that pose short- and/or long-term risks to achievement of the T watershed source habitat objectives (T-O1 and T-O2), existing authorities shall be used to mitigate and/or require to the extent authorized design features that would minimize short-term impacts and permit long-term objective attainment.

**Rationale:** Land management agencies have limited authority to preclude certain activities (such as mining) in priority areas. However, they do have authority to require reasonable terms and conditions or mitigation measures to minimize the effects of some of these uses. This standard requires the use of existing authorities to minimize the impacts of certain uses, over which the BLM and Forest Service have limited authority.

**T-S3. Standard.** No new road construction shall be allowed in source habitats within T watersheds in the short term (10 years, subject to existing rights) unless needed to secure these areas from immediate adverse road effects or unless the activity is needed to achieve the T watershed objectives.

**NOTE: See also:**

**B-O11 and B-S14 regarding noxious weeds in T watersheds.**

**B-S5(S2) regarding EAWS in T watersheds.**

**B-S10 regarding accelerated learning in T watersheds.**

**R-O15 regarding Subbasin Review and restoration priorities in T watersheds.**

## Management Direction — Aquatic A1 and A2 Subwatersheds

### Description and Management Intent – A1 and A2 Subwatersheds

Aquatic A1 and A2 subwatersheds are one of the components of the aquatic/riparian/hydrologic strategy. These areas provide a system of core subwatersheds (6th-field hydrologic unit codes [HUCs]) that are the anchor for recovery and viability of widely distributed native fishes. They are not intended to be static, long-term reserves, but rather dynamic locations which change in response to new information or changed conditions. The A1 and A2 subwatersheds have many similarities, but they also have a few differences. The similarities are described here; the differences between the A1 and A2 subwatersheds are described in the respective sections.

Both A1 and A2 subwatersheds include important fish populations of one or more of the following:

- Known strong populations for the seven key salmonids (based on 1994 aquatic assessment data),
- Important anadromous fish populations in the Snake River Basin,
- Genetically pure populations of anadromous fish outside the Snake River Basin,
- Fringe populations for four of the key salmonids.

**Alternative S2 Only.** Both A1 and A2 subwatersheds with listed key salmonid species (bull trout, steelhead trout, stream-type chinook salmon, and ocean-type chinook salmon) have at least 5 percent Forest Service- and/or BLM-administered land. For unlisted key salmonid species (westslope cutthroat trout, redband trout, Yellowstone cutthroat trout), A1 subwatersheds have at least 25 percent Forest Service- and/or BLM-administered land (see Map 3-11).

**Alternative S3 Only.** Both A1 and A2 subwatersheds with listed key salmonid species (bull trout, steelhead trout, stream-type chinook salmon, and ocean-type chinook salmon) or unlisted key salmonid species (westslope cutthroat trout, redband trout,

*Yellowstone cutthroat trout) have at least 75 percent Forest Service- and/or BLM-administered land (see Map 3-12).*

**Alternative S2 Only.** *Both A1 and A2 subwatersheds were delineated using broad-scale data. It is intended that administrative units, using the criteria described above, will adjust the A1 and A2 subwatershed locations to incorporate new data prior to the signing of the ROD. In recognition of the dynamic nature of the ecosystem, an agreed upon implementation process for post-ROD adjustments will be developed before the ROD is signed.*

**Alternative S3 Only.** *Both A1 and A2 subwatersheds were delineated using broad-scale data. Their locations are interim and are intended to be adjusted through land use plan revision or amendment. The criteria for modification will be provided in Forest Service Regional Guides and/or BLM State Director's Guidance or Instruction Memoranda to ensure that the network of habitats is delineated through land use plan revision or amendment.*

## **Description and Management Intent – A1 Subwatersheds**

The intent of management in A1 subwatersheds is to protect important fish populations by conserving and maintaining subwatershed and aquatic habitat conditions, processes, and functions. It is expected that these subwatersheds are currently near attainment of aquatic objectives. These areas are managed to ensure that subwatershed and habitat conditions are protected and maintained to facilitate and contribute to recovery of widely distributed salmonid fish species and other associated aquatic and riparian species. Management activities (for example, noxious weed treatments, prescribed fire and “wildland fire use for resource benefit”, non-commercial thinning) within A1 subwatersheds should be designed to pose very low risk of sediment delivery and very low risk of adversely affecting the hydrologic regime and riparian areas. Activities could be initiated in A1 subwatersheds if appropriate and necessary to address substantial and apparent short-term risks to the aquatic and riparian system.

A1 subwatersheds differ from A2 subwatersheds in the status of the land. A1 subwatersheds have at least 50 percent congressionally designated wilderness or predicted road densities of none, very low, or low.

Management direction of A1 subwatersheds will take precedence over other management direction in the ICBEMP project area.

## **Objectives, Standards, and Guidelines– A1 Subwatersheds**

**A1-O1. Objective.** Conserve current aquatic and riparian habitats that support important native fish population centers. This includes maintenance of hydrologic, riparian, and instream processes and functions; water quality; connectivity; and noxious weeds control.

**A1-O2. Objective.** Maintain habitats by permitting natural processes, including disturbance events such as fire, to continue whenever these processes will contribute to long-term sustainability of habitat and aquatic/riparian objectives.

**Rationale:** Disturbance processes, such as fire, can help maintain watershed qualities. Attempts to exclude these processes, such as with fire suppression, may have long-term detrimental consequences (for example, changes in vegetation and successional dynamics, and direct effects of fire suppression itself). “Wildland fire use for resource benefit” and prescribed fire both require extensive planning and documentation and must meet NEPA and agency requirements.

**A1-S1. Standard.** New management activities (subject to valid existing rights; see standard A1-S4) in A1 subwatersheds shall be conducted only if they maintain or achieve A1 subwatershed and aquatic/riparian/hydrologic objectives and pose very low short-term risk to aquatic, hydrologic, and riparian area functions and processes. Watershed Condition Indicators (WCIs) shall be used to evaluate proposed activities and determine consistency with the aquatic, riparian, and hydrologic objectives (see standard B-S43) and the specific intent of A1 subwatersheds. See the management intent and direction for WCIs for further detail.

**A1-S2. Standard.** No new road construction shall be allowed within A1 subwatersheds in the short term (10 years; subject to valid existing rights; see standard A1-S4) while A2 subwatersheds and other areas are being restored.



**Map 3-II. Aquatic A1 and A2 Subwatersheds, Alternative S2.**



**Map 3-12. Aquatic A1 and A2 Subwatersheds, Alternative S2.**

**A1-S3. Standard.** Existing land uses, facilities, and actions within A1 subwatersheds shall be modified, discontinued, or relocated (subject to valid existing rights; see standard A1-S4) if they prevent attainment of the A1 subwatershed and aquatic objectives. Watershed Condition Indicators (WCIs) shall be used to evaluate existing land uses, facilities, and actions and determine consistency with the aquatic, riparian, and hydrologic objectives (see standard B-S43) and the specific intent of A1 subwatersheds. See the management intent and direction for WCIs for further detail.

**A1-S4. Standard.** For those management activities conducted pursuant to valid existing rights that may pose short and/or long term risks to achievement of the A1 subwatershed objective, use existing authorities to mitigate and/or require implementation/design features that would minimize short-term impacts and allow long-term objective attainment.

**Rationale:** Land management agencies have limited authority to preclude certain activities (such as mining) in priority areas. However, they do have authority to require reasonable terms and conditions or mitigation measures to minimize the effects of some of these uses. Standard A1-S4 requires the use of existing authorities to minimize the impacts of certain uses, over which the BLM and Forest Service have limited authority.

**A1-S5(S3). Standard for Alternative S3 Only (no parallel standard for Alternative S2).**

The location of A1 subwatersheds can be modified only through land use plan revision or amendment using local data and knowledge. The criteria for modification will include: (1) critical components to be addressed (such as known strong populations of the seven key salmonids), (2) connectivity and distribution of aquatic habitats, and (3) an acreage “limitation” to ensure this component of the integrated broad-scale management strategy stays in balance with other unchanged components.

**Rationale:** A1 subwatersheds were delineated using broad-scale data. Their locations are interim and are intended to be modified through land use plan revision or amendment using local data and knowledge. The criteria to modify A1 subwatersheds will be included in Forest Service Regional Guides and/or BLM State Director’s Guidance or Instruction Memoranda

to ensure that the network of aquatic habitats will be modified consistently through land use plan revision or amendment.

## **Description and Management Intent – A2 Subwatersheds**

Active management is intended to take place within A2 subwatersheds to secure a network of connected habitats. However, management activities (for example, watershed restoration, noxious weed treatments, prescribed and “wildland fire use for resource benefit” [previously referred to as prescribed natural fire], thinning) within A2 subwatersheds are intended to pose low risk of sediment delivery and low risk of adversely affecting the hydrologic regime and riparian areas. It is expected that higher levels of road management and watershed restoration would occur in A2 subwatersheds than in A1 subwatersheds. Since predicted road densities are moderate or higher in A2 subwatersheds, opportunities may exist to access and restore uncharacteristic vegetation patch and pattern while meeting the A2 subwatershed and aquatic objectives.

A2 subwatersheds differ from A1 subwatersheds in the status of the lands. A2 subwatersheds have less than 50 percent congressionally designated wilderness, and moderate, high, or extreme predicted road densities.

## **Objectives, Standards, and Guidelines– A2 Subwatersheds**

**A2-O1. Objective.** Restore habitats supporting important native fish population centers while minimizing disruption to functioning hydrologic processes. Address immediate risks to hydrologic, riparian, and instream processes; water quality; and connectivity. Integrate needs for terrestrial habitat restoration and restoration of succession/disturbance regimes (such as noxious weed control) that meet the management intent of A2 subwatersheds and that pose low short-term risk to aquatic habitats.

**A2-O2. Objective.** Maintain habitats by permitting natural processes including disturbance events such as fire to continue whenever these processes will pose low short-term risk and contribute to long-term sustainability of habitat and aquatic/riparian objectives.

**Rationale:** Disturbance processes, such as fire, can help maintain watershed qualities. Attempts to exclude these processes, such as with fire suppression, may have long-term detrimental consequences (for example, changes in vegetation and successional dynamics, and direct effects of fire suppression itself). “Wildland fire use for resource benefit” and prescribed fire both require extensive planning and documentation and must meet NEPA and agency requirements.

**A2-S1. Standard.** New management activities (subject to valid existing rights; see standard A2-S4) in A2 subwatersheds shall be conducted only if they achieve A2 subwatershed and aquatic/riparian/hydrologic objectives and pose low short-term risk to aquatic, hydrologic and riparian area functions and processes. Watershed Condition Indicators (WCIs) shall be used to evaluate proposed activities and determine consistency with the aquatic, riparian, and hydrologic objectives (see standard B-S43) and the specific intent of A2 subwatersheds. See the management intent and direction for WCIs for further detail.

**A2-S2. Standard.** No new road construction shall be allowed within A2 subwatersheds in the short term (10 years; subject to valid existing rights; see standard A2-S4) unless needed to secure these subwatersheds from immediate adverse road effects or unless the activity is needed to achieve the A2 subwatershed and aquatic objectives.

**Rationale:** The exception in this standard to no new road construction recognizes that construction may be necessary when a road that is causing unacceptable adverse effects has to be obliterated and relocated.

**A2-S3. Standard.** Existing land uses facilities and actions within A2 subwatersheds shall be modified, discontinued, or relocated (subject to valid existing rights; see standard A2-S4) if they prevent attainment of A2 subwatershed and aquatic/riparian/hydrologic objectives. Watershed Condition Indicators (WCIs) shall be used to evaluate existing land uses, facilities, and actions and determine consistency with the aquatic, riparian, and hydrologic objectives (see standard B-S43) and the specific intent of A2 subwatersheds. See the management intent and direction for WCIs for further detail.

**A2-S4. Standard.** For those management activities conducted pursuant to valid existing rights that may pose risk to achieving the A2 subwatershed and

aquatic/riparian/hydrologic objectives, existing authorities shall be used to mitigate and/or require to the extent authorized implementation/design features that would minimize short-term impacts and allow long-term attainment of objectives.

**Rationale:** Land management agencies have limited authority to preclude certain activities (such as mining) in priority areas. However, they do have authority to require reasonable terms and conditions or mitigation measures to minimize the effects of some of these uses. Standard A2-S4 requires the use of existing authorities to minimize the impacts of certain uses over which the BLM and Forest Service have limited authority.

**A2-S5(S3). Standard for Alternative S3 Only (no parallel standard for Alternative S2).**

The location of A2 subwatersheds can be modified only through land use plan revision or amendment using local data and knowledge. The criteria for modification will include: (1) critical components to be addressed (such as known strong populations of the seven key salmonids), (2) connectivity and distribution of aquatic habitats, and (3) an acreage “limitation” to ensure this component of the integrated broad-scale management strategy stays in balance with other unchanged components.

**Rationale:** A2 subwatersheds were delineated using broad-scale data. Their locations are interim and are intended to be modified through land use plan revision or amendment using local data and knowledge. The criteria to modify A2 subwatersheds will be included in Forest Service Regional Guides and/or BLM State Director’s Guidance or Instruction Memoranda to ensure that the network of aquatic habitats will be modified consistently through land use plan revision or amendment.

**NOTE: See also:**

**B-O11 and B-S14 regarding noxious weeds in A2 subwatersheds.**

**R-O25 and associated guidelines regarding Subbasin Review and the A1/A2 network.**

**R-O26 regarding restoration priorities.**

**B-S10 regarding accelerated learning in A1/A2 subwatersheds.**

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