

UCRB

Chapter 3

Alternatives

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Key Terms

Adaptive management ~ A type of natural resource management that implies making decisions as part of an on-going process. Adaptive management involves testing, monitoring, evaluation, and incorporating new knowledge into management approaches based on scientific findings and the needs of society.

Disturbance ~ Any event that alters the structure, composition, or function of terrestrial or aquatic habitats; fire, flood, and timber harvest are examples of large-scale disturbances.

Desired Range of Future Conditions (DRFC) ~ A portrayal of the land, resource, or social and economic conditions that are expected to result in 50–100 years if objectives are achieved; in this document, portrayed as a range of conditions. A vision of the long-term condition of the land.

Ecological integrity ~ In general, refers to the degree to which the elements of biodiversity and the functions and processes that link them together and sustain the entire system; the quality of being complete; a sense of wholeness.

Ecological process ~ The flow and cycling of energy, materials, and organisms in an ecosystem.

Endemic species ~ Plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality.

Lethal (stand-replacing) fires ~ In forests, fires in which less than 20 percent of the basal area or less than 10 percent of the canopy cover remains; in rangelands, fires in which most of the shrub overstory or encroaching trees are killed.

Maintain ~ To continue to keep ecosystem functions, processes, and/or components (such as soil, air, water, vegetation) in such a condition that the ecosystem's ability to accomplish current and future management objectives is not weakened. Management activities may be compatible with ecosystem maintenance if actions are designed to maintain or improve current ecosystem conditions.

Mature and old multi-story forest ~ Forest characterized by two or more canopy layers with generally mature and old trees in the upper canopy. Understory trees are also usually present. It can include both shade-tolerant and shade-intolerant species, and is generally adapted to a mixed fire regime of both lethal and non-lethal fires.

Mature and old single-story forest ~ Forest characterized by a single canopy layer consisting of mature and old trees. Understory trees are often absent, or present in randomly spaced patches. It generally consists of widely spaced, shade-intolerant species, such as ponderosa pine and western larch, adapted to a non-lethal, high frequency fire regime.

Mature ~ Refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.

Nonlethal fire ~ In forests, fires in which more than 70 percent of the basal area or more than 90 percent of the canopy cover survives; in rangelands, fires in which more than 90 percent of the vegetative cover survives (implies that fire is occurring in an herbaceous-dominated community).

Old ~ Refers to ages and sizes of dominant trees that are significantly beyond what may be found at culmination of mean annual increment of tree stand volume growth.

Proper Functioning Condition (PFC) ~ Riparian-wetland areas achieve Proper Functioning Condition when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows. This thereby reduces erosion and improves water quality; filters sediment, captures bedload, and aids floodplain development; improves floodwater retention and groundwater recharge; develops root masses that stabilize stream banks against cutting action; develops diverse ponding and channel characteristics to provide habitat and water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and supports greater biodiversity. The functioning condition of riparian-wetland areas is a result of the interaction among geology, soil, water, and vegetation.

Introduction

Chapter 1 explained the purpose of, and need for, the action proposed by this project. It also briefly described the scoping process that identified the significant issues addressed by this EIS. Chapter 2 described resource conditions and trends. Chapter 3 presents a range of alternative management strategies, developed in response to the information presented in Chapters 1 and 2.

Chapter 3 includes seven alternatives presented in detail. Alternatives 1 and 2 are each variations of a “no-action” alternative, while Alternatives 3 through 7 are “action” alternatives. The term “No Action” does not mean no management; rather it is a term used in the National Environmental Policy Act (NEPA) to signify an alternative that is a continuation of current management, and no different action is required.

Each action alternative was formulated through a multi-step process. For help in understanding these alternatives, please see “A User’s Guide to the Action Alternatives” found at the end of this chapter.

Alternatives Considered But Eliminated From Detailed Study

During the extensive public involvement process that started with the publication of the Notice of Intent to prepare this EIS, several public groups, tribes, and other governmental agencies participated by offering written suggestions for formulation of alternatives or for parts of an alternative. Those offering suggestions included several American Indian tribes, Boise Cascade Corporation, the Eastside Ecosystem Coalition of Counties, Weyerhaeuser Corporation, the World Wildlife Fund, and Federal agencies including the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and the U.S. Environmental Protection Agency.

Input submitted by several American Indian tribes included proposals on aquatic conservation strategies, socio-economic considerations, and other information relating to trust responsibilities. This input was considered and used during alternative development.

An aquatic conservation strategy was proposed based in part on input from the Association of Forest Service Employees for Environmental Ethics (AFSEEE) and the Columbia River Inter-Tribal Fish Commission (CRITFC). Much of this strategy has been incorporated into Alternative 7. Additional interactions with the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and the Environmental Protection Agency led to modification of aquatic strategies for other alternatives.

Suggestions were reviewed by the interdisciplinary teams in light of the purpose and need statement, the issues identified through the public scoping process, the level of detail at which this EIS is being written, the information available in the assessment from the Science Integration Team, and the themes of the alternatives. To the extent the suggestions helped meet the purpose and need and address identified issues at the broad scale of this EIS, they were used in development of the “action” alternatives.

Only one complete alternative from outside the government was presented for the EIS teams’ consideration. This came from the Association of Forest Service Employees for Environmental Ethics (AFSEEE). The EIS teams determined that, taken in its entirety, the AFSEEE 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 National Forest System- and BLM-administered lands. Further, the proposed alternative was not based on the Science Integration Team’s assessment. Although the AFSEEE alternative was not described in its entirety as a separate alternative, and not analyzed in detail, several of its elements were incorporated into Alternative 7.

Development of Alternatives Considered in Detail

Alternative development began with the purpose of and need for the proposed action described in Chapter 1. Briefly, the purpose is to provide a coordinated approach to a scientifically sound, ecosystem-based management strategy for lands administered by the Forest Service or BLM in the

project area. The needs are to restore and maintain long-term ecosystem health and integrity including support of the economic and/or social needs of people, cultures and communities, including support of predictable and sustainable levels of goods and services from National Forest- and BLM-administered lands.

The action alternatives (3–7) are all intended to meet this purpose and fulfill this need. The no-action alternatives (1 and 2) were not designed to fully satisfy the purpose and need, but to provide the NEPA-required benchmarks against which to evaluate the action alternatives.

Alternative 1 would continue management specified under the existing regional guides and forest plans for Forest Service- administered lands, and resource management plans and management framework plans for BLM-administered lands. The EIS team did not attempt to include a description of all of these current plans in Alternative 1, because they are written at a more detailed scale than is appropriate for this project. Instead, a group of experienced planners from both agencies was formed to review existing plans. This work group then consolidated objectives, standards, and guidelines from those plans into objectives, standards, and guidelines that are representative of existing plans at the broad scale. The work group, in collaboration with the EIS team, then described the “desired range of future conditions” that was expected to result from the existing plans if they are successfully implemented. Many of the objectives and standards listed in Alternative 1 appear in most of the existing plans. However, the description of Alternative 1 does not include all of the decisions of any one current plan, and not all of the objectives and standards of Alternative 1 appear in any one land-use plan in the study area.

Alternative 2 includes the direction of Alternative 1, and, in addition, would adopt recent interim aquatic conservation strategies (PACFISH and INFISH) as the direction for the long term. The desired range of future conditions for Alternative 2 is the same as that for Alternative 1, with the addition of a description of expected or desired water quality, aquatic, and riparian conditions to reflect long-term application of interim strategies.

The action alternatives were developed to respond in different ways to the seven issues

identified through the scoping process (as described in Chapter 1), as well as the resource conditions and trends identified by the Science Integration Team (SIT), which are summarized in Chapter 2. The themes of the alternatives were developed to provide a range of reasonable alternative responses to identified issues. For example, issue number 2, shown in Chapter 1, is, “To what degree, and under what circumstances, should restoration be active (with human intervention) or passive (letting nature take its course)?” The theme of Alternative 4 is to aggressively restore ecosystem health through active management. The theme of Alternative 7 is to establish a system of reserves on public land in which the level of human use and management is very low. The other alternatives portray levels of human intervention that lie between these two sideboards of active versus passive management.

Mitigation

The alternatives include goals and objectives, and their achievement may require alteration of the physical and biological environment. However, the record of decision does not itself fund, authorize, or carry out any ground-disturbing activities.

The alternatives also include standards and guidelines (related to other goals and objectives) that will minimize the environmental consequences associated with modifying the landscape. Because they are mandatory, standards will prevent certain future actions, or parts of them, from occurring (40 CFR 1508.20(a)). Standards will also minimize environmental impacts by limiting the level of future activities (40 CFR 1508.20(b)). In addition, each alternative includes a component of restoration (40 CFR 1508.20(c)). Thus, mitigation is an integral component of each of the alternatives.

Further site-specific mitigation measures will be adopted in conjunction with projects implementing this decision. Such decisions will be preceded by additional environmental analysis, at which time additional concerns regarding mitigation will be addressed.

What Is Restoration?

Restoration is a term and concept used as a basis for several of the action alternatives. It means to restore the functions and/or processes associated with certain ecosystem components. In a general sense, it relates to achieving and/or maintaining more sustainable conditions over time. Alternatives 4, 6, and 7 heavily emphasize restoration to achieve more sustainable ecosystem function, structure, and process. A combination of active and passive actions are anticipated to achieve the goals and objectives of these alternatives. Restoration can take on many forms, and some of these are briefly discussed below.

Active Restoration ~ Investments of time, money and human resources are generally necessary for active restoration. As described in Table 3-12 and in other parts of this Draft EIS, active restoration can include a variety of activities.

Livestock management includes improved grazing systems, changing riparian management grazing practices, season of use, herding, number of animals, distribution, and kind of animals. Restoration of rangeland resources can be influenced by improved combinations of livestock management techniques.

Improving rangelands includes investments in fencing, stock water improvements, seedings, control of exotic weeds, and control of shrubs and juniper expansion. Active control of exotic weeds can benefit wildlife through improved habitat and soil and hydrologic functions, which can result in more natural or favorable fire regimes.

Watershed restoration and riparian restoration includes improved road maintenance, plantings, instream channel improvements and riparian exclosures. Closed roads closed that still have a negative effect in the watershed can be obliterated and put back to the original slope.

Decreasing the negative impacts of roads includes decreasing road density through obliteration or permanent closures of primarily native surfaced roads, improving location and drainage, improving stability, reducing sediment, and more effective maintenance.

Prescribed fire includes the ignition of fire under controlled conditions to reduce fuels or alter species composition, structure, or stocking.

Prescribed natural fire is generally guided by approved fire management plans and is intended to reintroduce fire into ecosystems to achieve multiple benefits.

Timber harvest can be used to alter stocking, species composition and distribution, structure, seral stage, habitat condition, and favor large trees that are more resistant to fire, insects and disease. Patterns can be created that are more sustainable and resilient to catastrophic disturbances.

Thinning can be used to effectively reduce stocking levels and associated stresses, and alter species composition to more desirable mixes.

Other active measures, such as reduction in stand density, fuels, and patterns of vegetation can help reduce risks in urban/rural/wildland interface lands, thus helping to sustain desirable wildland conditions.

Active restoration also includes such activities as altering recreation sites to improve streambank and sedimentation conditions. Managing vegetation patterns across the landscape can restore more sustainable mixes of successional stages in both rangelands and forestlands. These patterns can then contribute to better functioning connective corridors to improve genetic interactions of species. Investments are often needed to re-connect fragmented aquatic habitats that impede movement and interactions of species. Reduction of fuels in wildland/urban interface areas can protect other resources and improvements over time.

It can be expected that some activities will be designed and implemented to meet several objectives, including both social/economic and ecological restoration objectives. Some watersheds, for example, currently contain road systems which are negatively impacting aquatic species. These same watersheds may also have existing vegetation conditions which are undesirable. Carefully designed activities could address both the undesirable vegetation and road/watershed conditions in ways that improve the ecosystem over time, and also provide employment opportunities.

Passive Restoration ~ Restoration of riparian function is often achieved by passive protective actions which allow vegetation, sediment flow and channel development to occur naturally. Aquatic conservation strategies establish priorities and protection for riparian areas and restrict activities that could degrade these values. Through this combination of restricting certain management activities, and allowing natural processes to work, riparian restoration can be successful.

What is Restoration? (continued)

In conjunction with active measures such as road closures, other objectives can often be achieved passively. For example, maintaining or restoring fisheries and wildlife habitats, reducing pressure on isolated populations, or retaining large dead or downed trees can occur naturally in some areas by reducing or restricting human access. Seasonal road closures can also benefit wildlife species or reduce the risk of human-induced wildfires.

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

Spatial Considerations ~ The forest and range clusters generally describe opportunities and priorities for restoration. These are augmented by activity tables indicating expected activity levels by cluster and by alternative. Between Draft and Final EIS, the Project staff intend to develop more spatially specific information and prioritization for restoration and other activities, while addressing inherent risks.

Restoration Success ~ Restoration activities are expected to vary by alternative and local conditions. The success of restoration activities needs to be closely monitored to assure desired results occur. Through adaptive management, land managers can learn which actions are most successful locally, and can constantly adjust practices to achieve desired restoration results.

Description of the Alternatives

Each of the seven alternatives is considered in detail and described below. For each alternative, a theme, or brief description of the alternative, is presented, followed by a discussion of the design or focus of the alternative. A description of the desired range of future conditions anticipated under the alternative is then given. Following this general description of each of the alternatives, the objectives and standards for each alternative are presented.

Management Emphases

One of six management emphases was given to each forest and range cluster (see last section in Chapter 2 for definition). The emphases are conserve, restore, produce, conserve-restore, conserve-produce, and restore-produce. The primary three emphases are defined below. See the User's Guide at the end of this chapter for more information.

Conserve ~ Management emphasis is on protection and maintenance of forest, rangeland, and aquatic conditions, health, and integrity.

Management recognizes that natural processes dominate the landscape and gradual change will occur. Generally, the conserve emphasis is applied as the primary management emphasis to areas with moderate to high ecological integrity. Secondly, the restore or produce emphasis is applied when associated benefits can be provided.

Restore ~ Management emphasis is designed to move ecosystems to desired conditions and processes, and/or to healthy forestlands, rangelands, and aquatic systems. A variety of management-induced activities dominate the landscape. Generally, restore emphasis is applied to areas of moderate to low ecological integrity. Secondly, the conserve emphasis is applied to areas with high integrity, and the produce emphasis is used when associated benefits can be provided.

Produce ~ Management emphasis is directed at providing, growing, or making goods and services available for human needs and/or desires, while sustaining productivity and maintaining associated values. Under produce emphasis, consumption-based activities dominate the landscape. This management emphasis is applied to areas available and suitable for resource production in order to provide goods and services. A restore emphasis may be used secondarily when production can be benefited.

What is meant by the term “Conserve”?

The term “conserve” is used to describe management emphasis for different sub-basins, and varies by alternative. In the broadest sense, it means to protect from loss or depletion. As applied in this document, the term implies the recognition of ecosystem functions and processes that are socially desirable and ecologically sustainable, and management of land, resources, and human interactions such that these are perpetuated in the future. Management emphasis of conserve can be attained both passively and actively, and can take on many forms.

Active Conservation ~ Investments of time, money and human resources are generally necessary for active conservation. Management actions are generally preceded by some form of analysis aimed at understanding what functions and processes are occurring that make the situation desirable. Analysis should also address the risks and opportunities of perpetuating these desired conditions into the future. Some examples include:

- maintenance of roads and trails to prevent erosion or sedimentation that could adversely affect water quality;
- removal of culverts that obstruct the natural meandering of a stream;
- managing vegetation to perpetuate desirable structure for rare species;
- closing of new roads after project completion to maintain habitat for species requiring seclusion;
- periodically using prescribed fire to maintain parklike conditions; and
- adapting a grazing strategy to insure the maintenance of proper functioning condition.

Passive Conservation ~ This is usually achieved by conscious decisions to allow natural events to maintain existing conditions, or move conditions to a desired status over time. Risks vary substantially depending on vegetation types, natural disturbance regimes and introduced factors such as exotic plants. Passive conservation still requires monitoring to assure desired results occur over time. Some examples of passive conservation include:

- management of research natural areas;
- administrative protection of special areas where management activities and/or human access is limited;
- policies or programs that retain desirable elements in the landscape, such as policies to not allow large trees to be harvested for fuelwood; and
- allowing natural disturbance to occur, such as prescribed natural fire in wilderness.

In reality, under a conserve management emphasis, there are generally a combination of active and passive approaches. Managing a Wild and Scenic River corridor often includes the exclusion of some practices that are acceptable in other places (passive), but management of human activities such as rafting (active) so that overall, desirable outcomes are perpetuated over time. The conserve management emphasis recognizes that ecosystems and human values are dynamic and will continue to change over time. Coupled with this, however, is the need to maintain options for the future or to perpetuate conditions or trends that are socially acceptable and ecologically sustainable.

Objectives are intended to move conditions toward the desired ranges of future conditions described for alternatives and to be implemented within 10 years. Objectives will differ among alternative and clusters according to different emphasis or combinations of emphasis as described by using the words restore, conserve, or produce. Although these alternatives by clusters may have emphasis to restore or conserve or produce something, this does not indicate that there are no other major uses of resources. For example, production of forage for livestock grazing is still a major part of all alternatives even though there may not be an emphasis to produce livestock forage in an objective. It is expected that restoration, conservation, and production activities would occur in all alternative even if they are not emphasized in an objective.

Management emphasis was developed and given to each forest and range cluster to indicate expected priorities and outcomes from management activities. These are not allocations in the traditional land management planning sense. This emphasis was developed from the description of Management Priorities in Chapter 1, and given to the clusters by alternatives based on the themes of the alternatives and Desired Range of Future Conditions described later in this chapter. The intent was to indicate general priorities and outcomes to aid analysis of the effects of the alternatives. These management emphasis descriptions were not intended to be allocations of land areas or activities.

What Is meant by the term "Produce"?

The Produce management emphasis generally means that actions are aimed at providing, growing, or otherwise making available goods and services for human needs within the capabilities of ecosystems. This is primarily an active management approach where landscapes are assessed for their capabilities and that is matched as best possible to human demands. Goods and services from these lands generate wealth, and provide for the well-being of communities and individuals. Existing laws for environmental protection are met, as is direction in existing management plans. The produce management emphasis also reflects the desired range of future conditions and is guided by standards and objectives in Table 3-5. Goods and services include a wide variety of benefits, ranging from timber products, livestock forage, and minerals, to harvestable populations of fish and wildlife, and developed recreation. Under this management emphasis, there are significant investments in money, time, and human resources to manage for conditions that will provide goods and services over time, while protecting resources and reducing impacts from wildfire, insects, and disease.

The management emphasis given to each cluster by alternative should be used during implementation to outline the framework and context to conduct management activities. Local decision processes are intended to reflect these priorities, emphasis, and opportunities. Management emphasis is one part of the process that links broad-level decisions and information to finer levels, and plays an important role in mid-level analysis, as described in appendix I.

Alternative 1

Theme

Alternative 1 (no action) continues management specified under existing Forest Service and BLM land-use plans. Implementation of this alternative would occur assuming recent budgets. Analysis of the alternative is a requirement of the National Environmental Policy Act (NEPA) and BLM and Forest Service planning procedures. This alternative displays the likely outcome of Federal agencies' use of existing plans to manage lands and resources into the future.

Existing Forest Service and BLM plans include regional guides, forest plans (for each National Forest), resource management plans, and management framework plans (for BLM Districts). The no-action alternative includes direction from 16 National Forest plans and 31 BLM plans prepared between 1975 and 1990.

Although substantial variation exists among agency plans, the general management approach is to emphasize or accommodate sustained timber, wood fiber, and livestock forage production in an

environmentally prudent manner while managing and protecting other resources and values. Timber and livestock management are integrated and coordinated with the maintenance or enhancement of wildlife and fish habitat, scenic quality, recreation opportunities, and other resource values to achieve overall multiple-use goals and objectives. On many areas, management of other resources or values is emphasized such as recreation, Wilderness, big game and fish habitat, and cultural resources.

What is the Design of Alternative 1?

The underlying philosophy in Alternative 1 is one of multiple-use of the National Forests and BLM-administered lands, to produce goods and services in helping to meet the needs of the American people. Many current plans emphasize sustained yields of timber, wood fiber, and livestock forage, while maintaining site productivity and environmental quality. The EIS team has attempted to reformat the description of the decisions in current plans to allow comparison with Alternatives 3 through 7.

Activity tables (tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 1 were selected.

Under Alternative 1, production is generally emphasized in both forest and range clusters (see table below, and maps 3-1 and 3-2). A relatively high level of outputs of timber and livestock forage is expected under many current plans in the project area.

With a general focus on production from forestlands, many current plans rely on even-

aged management practices leading to forests characterized by a regulated forest of early to mid-seral structures, early successional species, and controlled densities and patterns. Generally a minimum level of late/old structures and habitats is planned. Many forest plans were based on the assumption of healthy ecosystem conditions. On rangelands, vegetation management is focused on providing forage for livestock and wildlife while protecting productivity and coordinating with other uses.

A number of other resources and related activities, including recreation, Wild and Scenic Rivers, mining, wildlife, fisheries, and Wilderness are managed for their intrinsic values. Some resources, such as Wilderness, are managed to protect and maintain their intrinsic values. Although restoration activities occur in this alternative, most are planned at relatively low levels. Exceptions include stand density controls through thinning in forest clusters 3, 4, and 5 at moderate levels, and use of prescribed natural fire at high levels in forest clusters 1 and 2 and range cluster 2.

Within Alternative 1, wildlife habitat management generally results from the coordination of forest and range management activities. Many plans incorporate management of habitats and habitat components for big game and other game animals, which could be relatively easily coordinated with vegetation management. Emphasis is on developing effective habitat by managing factors of vegetative conditions and distribution of roads. Noted earlier, certain key habitats and habitat components such as late/old-growth forests, snags, and downed wood were generally planned to be at relatively low levels (often the minimum) with the intent of maintaining viable populations. The plans require protection of unique habitats and recovery of threatened and endangered species through the appropriate recovery process.

Planned management of riparian and aquatic resources is often focused on attainment of water quality and habitat criteria (pools, large wood, stable banks, vegetative conditions) through application of Best Management Practices (BMPs). BMPs are a system of accepted practices often focused on protection of key resources or prevention of an undesirable impact, while allowing for existing uses. Restoration of watershed and aquatic resources under Alternative 1 is encouraged.

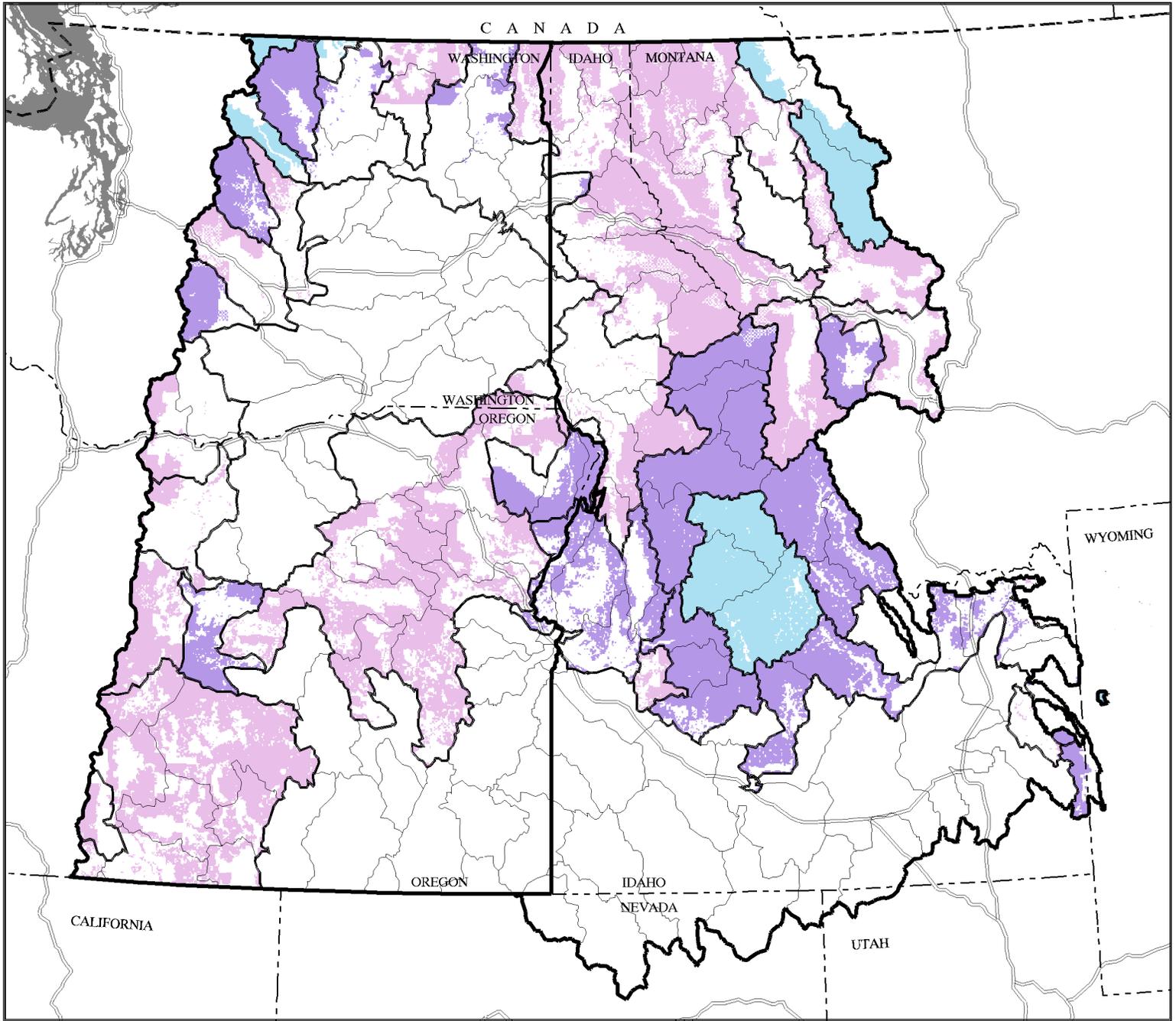
Map 3-3 shows areas where ecosystem analysis is required under Alternative 1.

Desired Range of Future Conditions

Alternative 1 is based on existing land and resource management plans currently being implemented by the BLM or the Forest Service. Within the upper Columbia River Basin EIS area, there are 47 existing plans for these lands. Each plan has desired future conditions or other expectations. The plans are from 6 to 21 years old and cover diverse ecosystems; therefore there are large differences in the desired future conditions described among the plans. This has been discussed in Chapter 1 and is one of the reasons for development of this environmental impact statement with more consistent management strategies. Recognizing the diverse expectations within existing plans, the following is intended to display general expectations so comparisons can be made between the existing plans and other alternatives. As disclosed in Chapter 4, there have been significant challenges in achieving the desired range of future conditions of the existing plans.

Alternative 1 - Management Emphasis Within Forest and Range Clusters for the Project Area

Management Emphasis	Forest Cluster	Range Cluster		Cluster No.
	% of Forest Cluster	Cluster No.	% of Range Cluster	
Conserve	10	1	8	2
Produce	57	3, 4, 5	67	1, 4, 5, 6
Produce/Conserve	33	2, 6	25	3



Map 3-1.
Alternative 1
Management Emphasis
for Forest Clusters

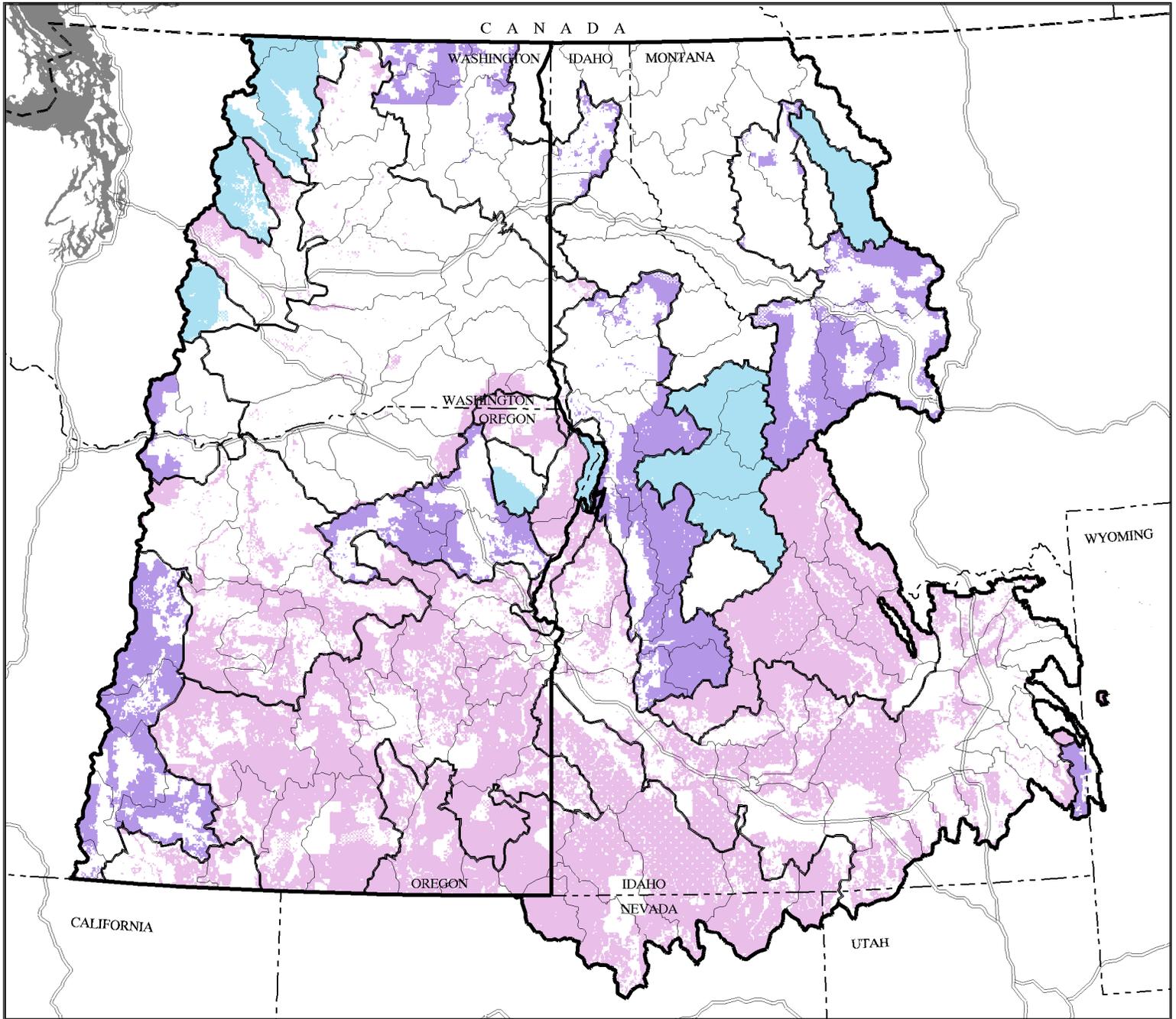
*BLM and Forest Service
 Administered Lands Only*

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |

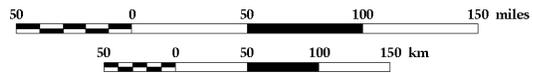


Map 3-2.
Alternative 1
Management Emphasis
for Range Clusters

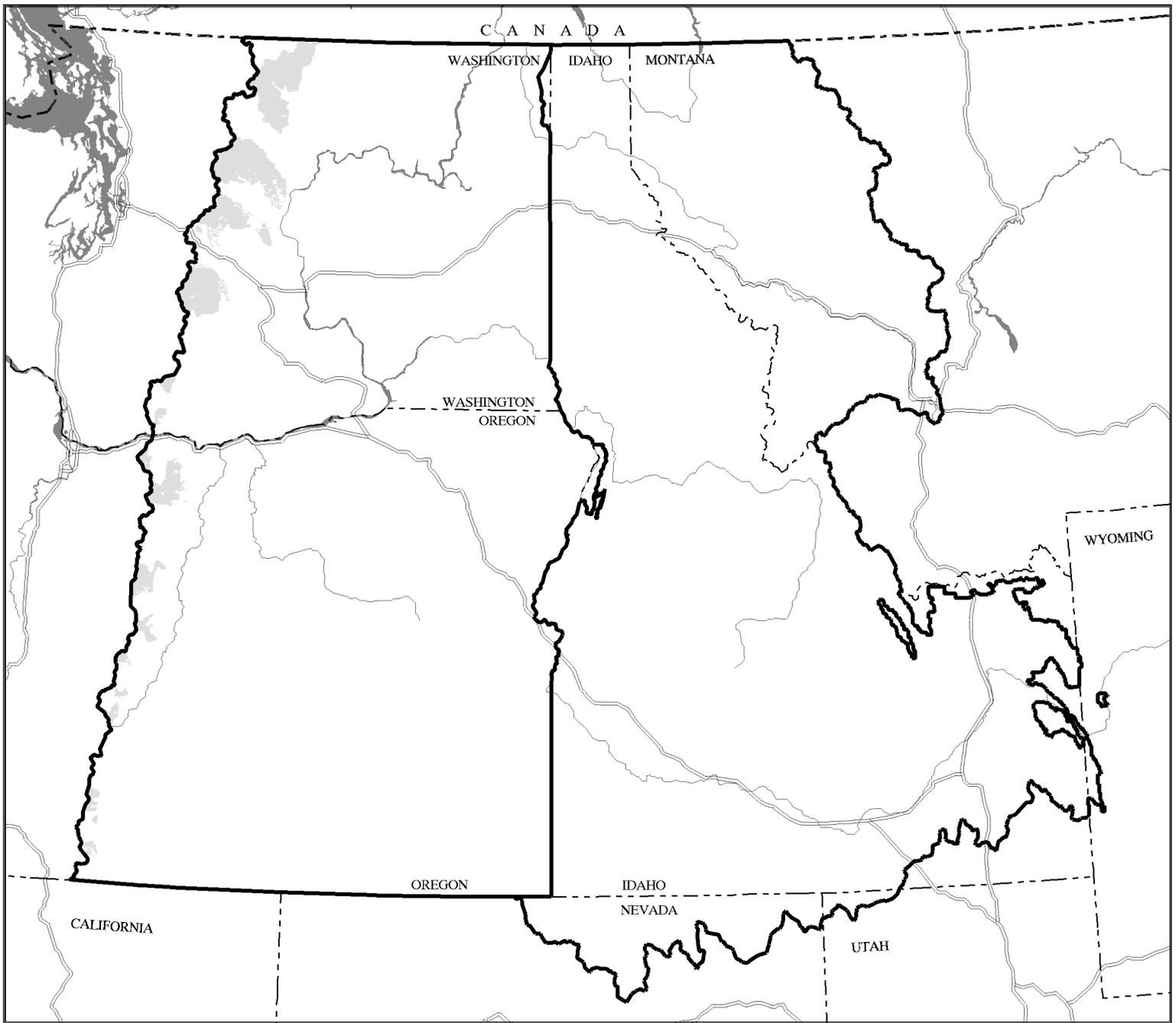
*BLM and Forest Service
 Administered Lands Only*

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

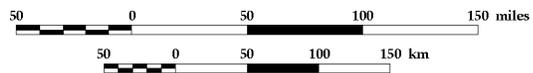
Project Area
 1996



- | | |
|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |



Map 3-3.
Alternatives 1 and 2
Potential Areas for Ecosystem Analysis
at the Watershed Scale



-  Analysis Areas
-  Major Rivers
-  Major Roads
-  EIS Area Border

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996

Resource Management

Forests, shrubs, and grasslands, managed by the BLM and Forest Service, continue to provide a mix of natural resource-based goods and services. Management focuses on providing resource outputs including timber, livestock forage, huntable wildlife, and minerals while also providing for other multiple-uses and values including aesthetics, recreational opportunities, wildlife, and clean air and water. Current management has improved some conditions on public lands. Resource management emphasis is different among National Forests and BLM Districts across the project area based on the character of the land and resources, public interests, and land use plan decisions.

On National Forests and BLM forested areas, management emphasis is on sustained timber, wood fiber, and livestock forage production in an environmentally prudent manner, while managing and protecting other resources and values. Under this approach, timber harvest and livestock outputs are planned to be near levels produced at the time plans were approved. Timber production is planned only in areas classified as suitable for such production. Because BLM and some National Forest management tends to be more in grass and shrubland areas, the general perspective is to produce forage for livestock grazing, wildlife, and wild horses at or near levels when plans were approved. Under current management, timber and livestock management are coordinated with the maintenance or enhancement of wildlife and fish habitat, scenic quality, recreation opportunities, and other resource values to achieve overall, multiple-use goals and objectives. In general, most lands are open and accessible for mineral resource and gas and oil exploration and development, provided that unnecessary and undue degradation of public lands does not result from operations.

Forestland

Forests feature a diversity of stand conditions. Portions of the landscape are heavily influenced by commodity production and recreation use, while other locations are largely natural appearing. On lands suitable for timber production, forests show evidence of management activity at the stand level. Use of available technologies result in a forest managed to favor early successional species (such as ponderosa pine, lodgepole pine, western larch, Douglas-fir) with reduced stand densities, improved growth and yields, restored and maintained soil

productivity, and prompt reforestation achieved with genetically improved trees. Use of prescribed fire and thinning to manage vegetation and reduce fuel loads and ladders is also evident. Some areas emphasize even-aged stand management.

Horizontal diversity exists with a variety of stand patch sizes (less than 40 acres) and shapes visible. Stands are in a range of seral structural condition, primarily early (regenerated stands) to middle stages (stands near 20 inches DBH and up to 120 years old). Vertical diversity and a more natural appearing forest, with larger, older trees and several canopy layers, exist in areas where uneven-aged management is emphasized or long rotations are used. As a result of management over the long term, projected annual timber yields of desired timber sizes and quality are produced and long-term timber harvest sustainability is attained. Increased transitory forage will be available for livestock, big game, and other wildlife use.

Rangeland

Grass-shrub uplands evidence steady improvement and positive trends in vegetative and improved structural diversity. Changes have occurred through active grazing management and range betterment activities. As a result, authorized livestock forage use levels are near current levels, and output levels are maintained on a sustained basis.

Upland soils exhibit infiltration and permeability rates that are appropriate to soil types, climate, and landform. Riparian-wetland areas are in properly functioning condition. Stream channel morphology (including but not limited to gradient, width/depth ratio, channel roughness and sinuosity) and functions are appropriate for the climate and landform. Healthy, productive, and diverse populations of native species exist and are maintained.

Disturbances

As a result of prescribed fire, thinning, and insect abatement efforts, the health, vigor, and diversity of the forest has improved and ecosystems are healthier. Resistance to epidemics has increased and undesirable impacts of insects, diseases, and weeds have been mitigated through integrated pest management.

Wildlife Habitat

The amount and diversity of wildlife habitat is maintained or improved. Late/old seral forests and grass-shrublands exist in varying sized blocks and well distributed patterns across the landscape. Snags and dead/downed tree habitat continues to be available at planned and sustained levels. Some decline in old growth and dead/downed-tree-dependent species populations will occur where intensive forest management activities reduce the total amount of these key habitats. Big game species continue to be featured in many areas. Ongoing management of forest and rangeland habitat components and conditions (such as vegetative cover, forage, and roads) and key areas maintain big game populations near State wildlife agency objectives. Hunting continues to be enjoyed throughout the region. Improved forest, grass-shrubland, and riparian area conditions support and benefit a variety of other species by increasing the quality, quantity, and variety of habitat. Such species include waterfowl, upland game, raptors, and nongame species. Management has helped to create the long-term changes and improvements that contribute toward restoring some sensitive species, and toward recovery of several listed species.

Soil and Water

Across the region, soil function, processes, and productivity are maintained or improved through application of prevention, mitigation, or restoration measures. Effective ground cover is present in amounts and distribution to prevent erosion. Water quality is enhanced through management, so that most streams are providing cool, clear, clean water. Quality water is even more precious than at present; demand will be high from all users. However, the available water supply from forests and rangelands remains essentially unchanged, although summer low flows are increased. In the long term, air quality is good. Although use of prescribed burning has increased, application of best management practices, expanded fiber use, and reduced catastrophic wildfire contribute toward quality air.

Protection and maintenance of soil and water resources and productivity is emphasized by all National Forests and BLM Districts.

Riparian Areas

Riparian areas and stream habitat conditions have improved as a result of protection and management, including extensive stream habitat enhancement and restoration work. Management has promoted desirable riparian vegetative species, density and structural conditions, floodplain and bank stability and resiliency, appropriate sediment budgets and water temperatures, and channel morphological processes and characteristics. All conditions interact to support improved habitat, benefiting fish and wildlife across the region. Improved riparian and instream conditions move fish habitat capability toward its potential. Some previously imperiled and other sensitive fish species show an increasing or stable trend in abundance and distribution.

Uses are coordinated to enhance fisheries, water quality, and riparian resources, focusing on maintaining, protecting, and restoring natural functions to achieve healthy and productive ecological conditions. Many Forests and BLM Districts plan to maintain or enhance fish habitat capability and riparian resources, often through restoration and improvement activities.

Social and Economic

Many forested areas include Wilderness, scenic areas, Research Natural Areas, unroaded lands, old-growth reserves, and other locations not subject to timber management activities. These areas would be influenced by fire and other disturbances, recreation, and other uses. Larger expanses of forests in mid- to late-seral stages with closed canopies are evident, with patches of intolerant or climax species. Other areas will show more open, sub-climax seral stages due to extensive use of prescribed fire. Some areas show evidence of younger seral stages due to stand-replacing wildfire and timber harvest. Prescribed and natural fires and other activities have reduced evidence of forest insects and diseases in most areas.

All plans identify areas where varied recreational opportunities from Wilderness, special interest areas, non-motorized and roadless areas, and motorized dispersed activities are provided. National Forests and BLM Districts also provide developed recreation areas and facilities and have programs that seek to maintain scenic quality. Certain lands and features are identified

and incorporated into a system of classified or special interest areas, Areas of Critical Environmental Concern, or Research Natural Areas to protect and manage unique values such as scenic quality, wildlife, raptors, sensitive plants, historical sites, cultural resources, recreation opportunities, and others. Wilderness and Wild and Scenic Rivers have also been designated, or found administratively suitable for designation, and managed to conserve their values.

Changing forest and rangeland conditions also influence recreation activities, settings, and experience opportunities. At the same time, demand for recreation of all types will grow substantially. Both agencies respond to this increased demand by providing additional recreation opportunities. In some areas heavily used and very popular roads provide a base of roaded recreation. In other areas, increased road closures provide for more primitive or semi-primitive opportunities. Additional developed facilities, restored and maintained recreation sites, expanded and well maintained trail systems, and new winter use areas are a few of the means used to meet the demand. Visual quality will be emphasized in the important recreation and related areas; natural appearing conditions featuring larger trees or other desirable vegetation will be created and maintained through management. Some reduction in the amount of unroaded area has occurred, but Wilderness, unroaded, and other areas continue to meet some of the demand for primitive opportunities across the region. However, frequency of encounters will be noticeably increased. All areas continue to emphasize their feature attractions such as wild rivers; scenic areas; wildlife and fish; botanical, geologic, and historical areas; and interpreted cultural resource properties.

The traditional industries that use and produce resources from public lands continue to contribute to rural economic activity. Economic activity is focused on recreation, timber, livestock forage, water, and other locally and regionally important resources.

Alternative 2

Theme

This alternative applies recent interim direction as the long-term strategy for lands managed by the Forest Service or BLM. The interim direction was developed to retain options for management

of affected Federal lands while this environmental impact statement was being developed. Specific direction is described in the following decision notices:

- ◆ 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 31, 1995.
- ◆ Inland Native Fish Strategy (INFISH), July 31, 1995.

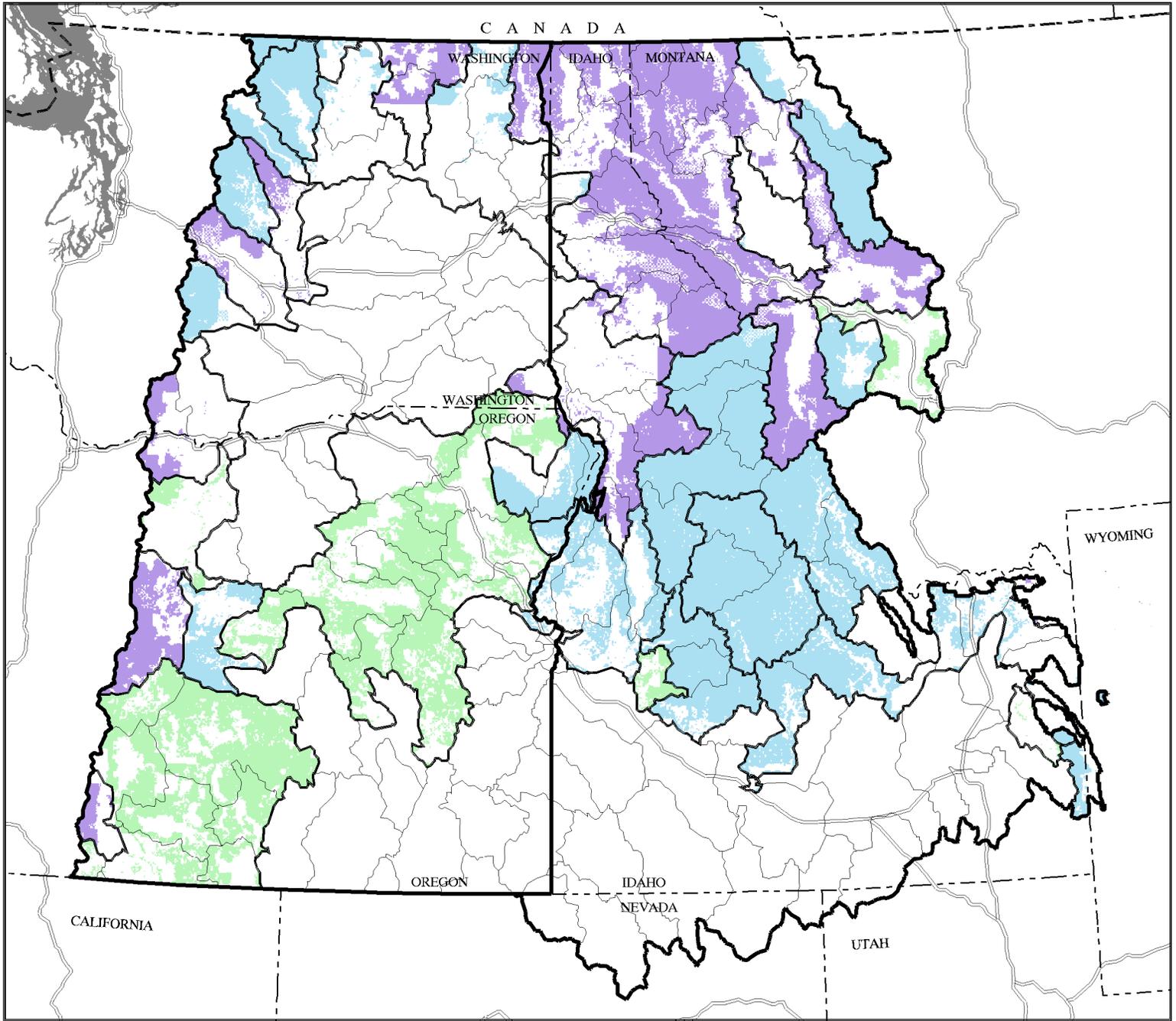
The interim direction emphasizes protection and maintenance of aquatic riparian and wildlife resources while using conservative approaches to management. Direction for PACFISH and INFISH does not overlap. All other direction from current plans (Alternative 1) would continue into the future. In addition, the BLM has issued Statewide Instruction Memoranda for the conservation of bull trout habitat in the project area. Direction described in Alternative 1 applies to those areas not covered by interim direction.

What is the Design of Alternative 2?

The basic philosophy and approaches to management in Alternative 2 are the same as Alternative 1, with the exception of more conservative management strategies applied in this alternative (see maps 3-4 and 3-5). The additional emphasis is on the protection and maintenance of aquatic and riparian resources throughout the project area.

Activity tables (tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 2 were selected.

Due to the emphasis and mix of Conserve strategies (see following table), planned output levels for timber and wood fiber are less than Alternative 1, with only forest clusters 3 and 4 at relatively moderate levels and all others at low levels. This, in part, reflects the effect of the fisheries strategies. Livestock production is planned at relatively high levels in range clusters 2 and 3 and moderate in all others. Management



Map 3-4.
Alternative 2
Management Emphasis
for Forest Clusters

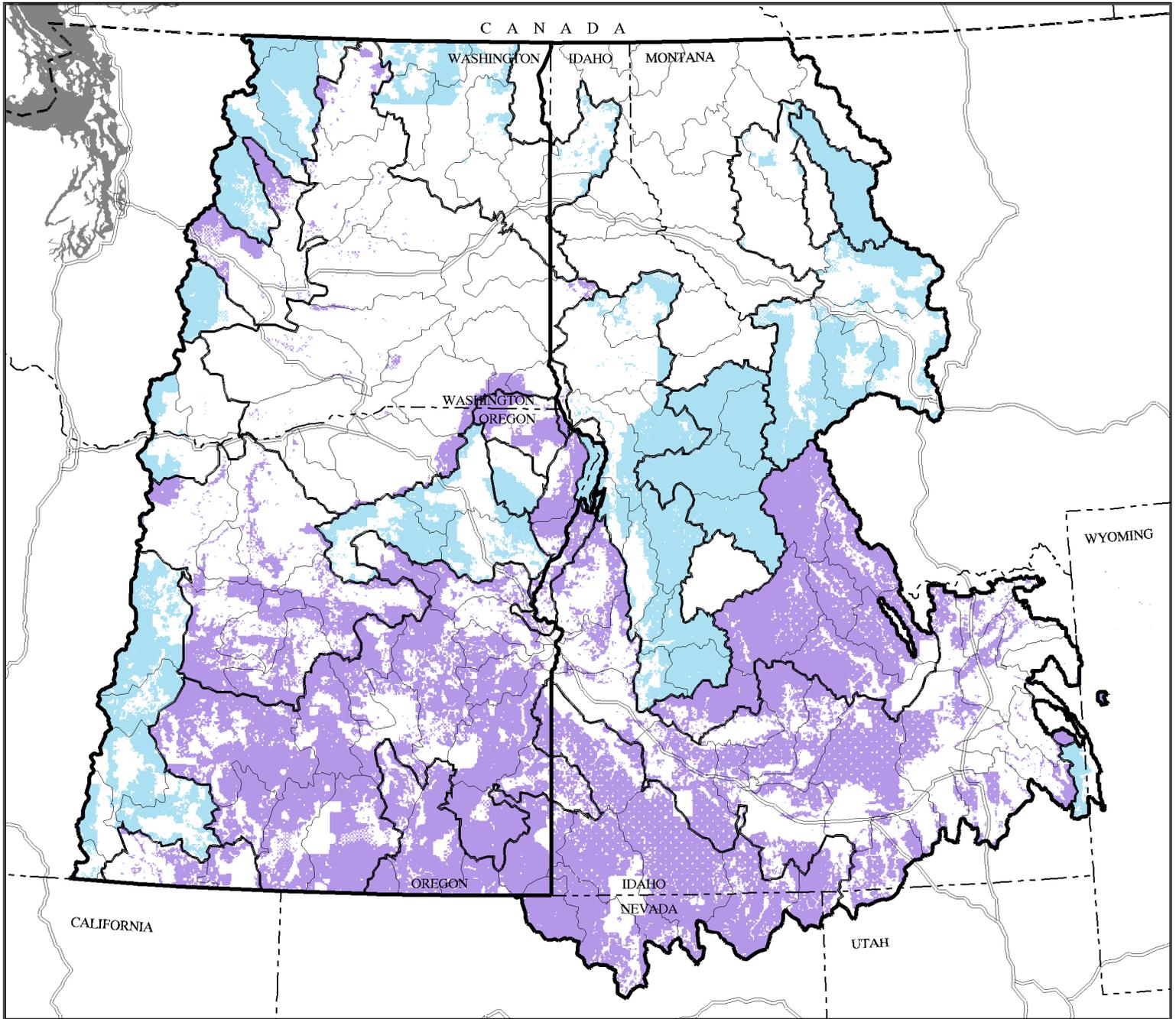
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INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |

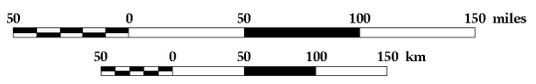


Map 3-5.
Alternative 2
Management Emphasis
for Range Clusters

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 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |

of other resources and values is also intended to be the same as Alternative 1.

Planned restoration management activities are nearly the same as Alternative 1 in forest clusters, with most being at relatively low levels. Within range clusters all restoration activities are planned at relatively low levels with the exception of prescribed natural fire at relatively high levels (same as Alternative 1).

The basic approach to management of wildlife habitat described in Alternative 1 applies to the upper Columbia River Basin Draft EIS area.

Aquatic requirements from PACFISH/INFISH are incorporated throughout most of the project area including:

- ◆ Establishing riparian habitat conservation areas (RHCAs; referred to as riparian conservation areas [RCAs] in this document) and riparian management objectives (RMOs);
- ◆ Incorporating associated project and site-specific standards and guidelines for resource management applied to RHCAs and upland areas affecting riparian areas;
- ◆ Designating key/priority watersheds or protection/restoration activities;
- ◆ Using ecosystem analysis at the watershed scale; and
- ◆ Focusing watershed restoration on degraded habitats to improve long-term conditions.

These requirements provide a consistent approach to aquatic habitat management within most of the project area.

Map 3-3, earlier in this chapter, shows areas where ecosystem analysis is required under Alternative 2.

Desired Range of Future Conditions

Under Alternative 2, forests and rangelands managed by the Forest Service and BLM continue to provide a mix of natural resource based goods and services. Rangelands show improving conditions and trends discussed in Alternative 1 desired future conditions. On forest areas not subject to timber management activities, desired future conditions are also the

same as described in Alternative 1. On areas subject to timber management and/or areas within designated riparian areas of key/priority watersheds, some differences in desired range of future conditions (from Alternative 1) apply.

The following desired range of future conditions applies to Forest Service- or BLM-administered lands subject to the management identified in PACFISH and INFISH. The desired range of future conditions is to maintain or restore:

- ◆ Healthy and productive riparian and aquatic ecosystems provide high water quality;
- ◆ Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed;
- ◆ Instream flows to support healthy riparian and aquatic habitats, the stability and effective functioning of stream channels, and the ability to route flood discharges;
- ◆ Natural timing and variability of the water table elevation in meadows and wetlands;
- ◆ Diversity and productivity of native and desired non-native plant communities in riparian zones;
- ◆ Riparian vegetation to: (1) provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems, (2) provide adequate summer and winter thermal regulation within the riparian and aquatic zones, and (3) help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed;
- ◆ Riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geoclimatic region; and
- ◆ Habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

Features Common to Alternatives 3 through 7

Goals

Goals are the foundation for developing alternatives. They are broad general statements of intent that aren't quantified or time specific. A set of goals common to all alternatives was developed because it is recognized that any ecosystem management strategy must simultaneously achieve a number of common conditions and outcomes. Goals were derived from consideration of the Project Charter, initial drafts of the Purpose and Need, and public and agency issues identified through the scoping process. All action alternatives address the goals to some degree and in varying amounts of time, but not all will meet the goals equally; some will be more successful at meeting a goal than will others. The goals were used to develop the evaluation criteria which are discussed as part of the analysis of consequences in Chapter 4 and summarized in table 3-9 later in this chapter.

Desired Range of Future Conditions

The condition of terrestrial and aquatic ecosystems in the project area reflects widely held social values and Indian trust responsibilities. Widely-held social values are most tangibly represented by federal statutes, such as the Endangered Species Act, Clean Air Act, Clean Water Act, National Forest Management Act, and the regulations developed for their implementation. In this document, the condition of terrestrial and aquatic ecosystems is addressed through the desired range of future conditions (DRFCs) that deal with forest and rangeland vegetation cover types, structures, disturbance patterns, and wildlife habitats; and

with watershed processes, riparian conditions, and aquatic species habitats.

The desired range of future conditions is a vision of the long-term condition of the land, portrayed in this document as a range of conditions expected to result in 50 to 100 years if objectives are achieved.

The following desired range of future conditions applies to Alternatives 3–7. In addition, each alternative will be described by a specific desired range of future conditions that is expected in 50 to 100 years.

Soils

- ◆ Most soils have at least minimal protective cover, soil organic matter, and coarse woody material (in woodlands and forests). Soils have adequate physical properties for vegetation growth and hydrologic function. Physical, chemical, and biological processes in most soils function similarly to soils that have not been harmfully disturbed.
- ◆ Degradation of soil quality and loss of soil productivity is prevented.
- ◆ Soil hydrologic function and productivity in riparian areas is protected, preserving water quality buffering and regulation of nutrient cycling.
- ◆ Soil productivity, quality, and function are restored.

HELP?

See the User's Guide at the end of Chapter 3.

Alternative 2 - Management Emphasis Within Forest and Range Clusters for the Project Area

Management Emphasis	Forest Cluster	Range Cluster		Cluster No.
	% of Forest Cluster	Cluster No.	% of Range Cluster	
Conserve	43	1, 2, 6	33	2, 3
Conserve/Restore	26	5	NA	NA
Produce/Conserve	31	3, 4	67	1, 4, 5, 6

Terrestrial Ecosystems

- ◆ Vegetation and fuel management strategies reduce the risk of life and property loss from wildfire.
- ◆ In the *dry forest* type, stand density, species composition, structure, fuel loading and distribution, and duff depth are moving toward a characteristic fire regime. The majority of fires are nonlethal underburns, generally occurring on more gentle terrain and rocky areas at less than 25-year intervals. Some lethal fires, which kill the overstory, continue to occur where topography funnels winds, in geographically windy areas, or on low productivity sites where trees rarely become tall enough for their crowns to survive flames. The smallest proportion of fires are of mixed severity.
- ◆ Dominant species in the dry forest type are resistant to low intensity fires. Stands of ponderosa pine are pure or mixed with western larch, Douglas-fir, or grand fir. The dry forest group is predominately an open community.
- ◆ In the *moist forest* type, mixed severity fires occur intermingled with surface and crown fires. Stand density, species compositions, structure, fuel loading and distribution, and duff depth are moving toward that which is associated with the highly variable fire regime. The majority of fires are mixed severity at intervals ranging from 25 to 150 years. Nonlethal fires occur on benches and ridges, and fires lethal to the overstory occur on upland slopes.
- ◆ Dominant species in the moist forest type are resistant to low and moderate intensity fires.
- ◆ Stands of Douglas-fir, lodgepole pine, ponderosa pine, or western larch are pure or mixed with western white pine, grand fir/white fir, western hemlock/western red cedar, or Engelmann spruce/subalpine fir.
- ◆ In the *cold forest* type, stand density, species composition, structure, fuel loading and distribution, and duff depth are moving toward a characteristic fire regime. Nonlethal underburns occur on benches and ridges where whitebark and lodgepole pine dominate. The lethal crown fire regime is found on moist to wet steep slopes. The most common fires are mixed severity, which usually occur intermingled with nonlethal and lethal fires during one or a series of fire events, with a frequency ranging from 25 to 150 years.
- ◆ Dominant species in the cold forest type are somewhat resistant to low intensity fires. Stands of lodgepole pine, Douglas-fir, or whitebark pine are pure or mixed with Engelmann spruce/subalpine fir, mountain hemlock, whitebark pine/subalpine larch, or aspen.
- ◆ Through time, dry and moist forest potential vegetation groups are improving in basic health, especially where the historical effects of harvest, fire exclusion, and road practices are not in sync with biophysical disturbances regimes and goals for the area.
- ◆ Dry and moist forest potential vegetation groups in the rural/wildland interface are managed to maintain mature and old single layer, open low density mid-seral forest or early seral physiognomic types, as appropriate to the biophysical environment (consistent with

Goals for Alternatives 3 through 7

- 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.

structure, tables 3-1 to 3-4), to reduce potentials for fires that crown, spread rapidly, and/or burn with high intensity, and reduce hazards to rural development. Some areas are managed to be inconsistent with the native biophysical template to produce desired fire hazard reductions.

- ◆ In dry and moist forest potential vegetation groups not in the rural/wildland interface zone, where the emphasis is to manage for maintenance of native patterns and processes (for example, Wilderness, semi-primitive areas), native fire regimes are maintained through prescribed fire and harvest (where appropriate).
- ◆ Progress is being made in restoring western white pine on suitable environments by regeneration with blister rust resistant stock.
- ◆ Management is proactive to avoid introduction or spread of exotic and noxious weeds in the dry and moist forest potential vegetation groups.
- ◆ The spread of noxious weeds is contained and ecologically sound methods of control are applied throughout the region.
- ◆ Habitats are suitable to maintain viable populations of listed and sensitive species.
- ◆ Natural Areas and habitats supporting high species endemism or biodiversity are present and contribute to viable populations.
- ◆ Healthy, productive, and diverse populations of plants and animals are maintained or restored.
- ◆ Dense shrublands are reduced in extent.
- ◆ Encroachment of juniper and conifers is declining.
- ◆ Shrub communities are of sufficient size and of appropriate arrangement to enhance connectivity among similar habitats.
- ◆ Most rangelands seeded with mixtures including predominately non-native plants are functioning to maintain life form diversity, production, nutrient cycling, energy flow, and the hydrologic cycle.
- ◆ Until feasible cost-effective rehabilitation treatments are developed, communities of undesirable exotic plants will meet minimum requirements of soil stability and maintenance of existing native and seeded plants.

Aquatic Ecosystems

- ◆ Riparian areas and wetlands (both standing and moving water) are within the range of properly functioning condition.
- ◆ Water quality meets Clean Water Act requirements, EPA-approved State and tribal water quality standards, and contributes to habitat quality and stream and lake conditions. Existing instream water uses and the level of water quality, necessary to protect the existing uses, are maintained and protected.
- ◆ High quality waters constituting an Outstanding Resource Water, as identified by a State or tribe, are maintained and protected.
- ◆ There are fewer roads in riparian areas and uplands, where roads causing accelerated erosion have been reduced. Most riparian areas are stable and are subjected to natural streamflow and sediment regimes. In some areas, open roads are stable.
- ◆ Watersheds provide for natural infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform.
- ◆ Riparian/wetland vegetation structure and diversity are making substantial progress toward controlling erosion, stabilizing stream banks, shading water areas, filtering sediment, aiding in floodplain development, dissipating energy, delaying flood water, and increasing recharge of groundwater appropriate to climate, geology, and landform.
- ◆ Stream channels and floodplains are functioning properly relative to the geomorphology (for example, gradient, size, shape, roughness, confinement, and sinuosity) and climate. Soils support native riparian and wetland vegetation to allow water movement, filtration, and storage.
- ◆ Surface and groundwater on public lands fully support, or are making substantial progress toward fully supporting, designated beneficial uses described in the Water Quality Standards of the States of Idaho, Montana, Wyoming, Utah, and Nevada.

Human Uses and Values

- ◆ Forest Service- and BLM-administered lands efficiently provide a mix of economic and cultural benefits to people that balances local, regional, national, and international

interests. The provision of benefits accounts for differences in social and economic relationships between these interests and the use of agency lands. Benefits are provided in type, amount, distribution, and regularity that is generally regarded as fair, well-reasoned, and conducive to predictable use. The mix of benefits supplied is responsive to changing public values and the comparative ability of agency-administered lands to supply goods and services relative to other suppliers. Benefits are produced in accordance with federal statutes and regulations, which most frequently address issues of efficiency, sustainability, supplying goods and services important to people, and consideration for local economic conditions.

- ◆ Economic activity is generated in rural communities, including private sector employment, agency employment, income, number of recreation visits, and revenues shared with local governments.
- ◆ Because patterns of disturbance (fire, insect, disease, tree windthrow, flood) trend toward being less extreme and more predictable, they present fewer threats of loss of human life and property and less risk of degradation of environmental conditions valued by people, especially at the wildland-urban interface zone.
- ◆ State and Federal resource management-related legal requirements are met.
- ◆ A broad range of recreational opportunities is available.
- ◆ Air quality complies with Clean Air Act requirements.
- ◆ Forest Service and BLM managers and planners use a mix of formal and informal mechanisms for including people in land use decisions, in the implementation of land use plans, and the monitoring of results. The Forest Service and BLM continually adapt mechanisms for including people to meet changing needs and conditions and improve effectiveness. Mechanisms provide opportunities for sharing knowledge, giving input, coordinating, and collaborating. The participation needs of tribal, local, and state governments, federal agencies, special interest groups, and the general public (local, regional, and national) are explicitly recognized and accommodated.

American Indians

- ◆ Tribal treaty rights and other Federal trust responsibilities are met.
- ◆ Tribal governments are involved in Federal agency planning, decision-making, and implementation of programs.
- ◆ Agencies recognize the tribes' right to self-determination and control of their resources and their relationship both among themselves and with non-Indian governments, organizations, and persons.
- ◆ There is an interconnected balance of physical landscape components, including upland terrestrial habitats, riparian areas, wetlands and clear, clean, cold water.
- ◆ Functional restoration of the ecosystem provides the capability to support harvestable levels of species of interest to the tribes.
- ◆ Culturally significant items and sites are understood and treated within the context of the culture that identifies and values them.

Alternative 3

Theme

This alternative updates existing Forest Service and BLM plans in response to changing conditions (such as declining forest and rangeland health, local economies at risk, and declining salmon runs), while minimizing changes to local plans and relying on local public needs and desires. Each National Forest or BLM unit would emphasize local public input to determine a desired mix of uses, services, and restoration and management actions consistent with ecosystem principles to incorporate into the land-use plans. Direct involvement with other federal agencies, and State, county, and tribal governments will be used in planning, decision-making, and implementation of programs.

The emphasis in this alternative is to make the minimal amount of repairs to existing plans that would allow them to be more effective, integrated, and consistent in the face of changed ecological conditions and increasing numbers of appeals and lawsuits. Only those priority conditions that most hinder the effectiveness of

Alternative 3 - Management Emphasis Within Forest and Range Clusters for the Project Area

Management Emphasis	Forest Cluster	Range Cluster		Cluster No.
	% of Forest Cluster	Cluster No.	% of Range Cluster	
Conserve	NA	NA	8	2
Conserve/Restore	28	1, 6	25	3
Restore	54	2, 3, 5	19	5
Restore/Produce	18	4	48	1, 4, 6

existing plans are addressed in this alternative and distinguish it from the no-action alternative (Alternative 1). This alternative provides a broader dimension and more integrated management direction regarding priority large-scale issues that cross administrative boundaries than do Alternatives 1 or 2.

What is the Design of Alternative 3?

Alternative 3 emphasizes a mix of restoration strategies for management of Forest Service- and BLM-administered lands. See maps 3-6 and 3-7.

Activity tables (tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 3 were selected.

In general, moderate levels of restoration activity are planned under this alternative (see table below). The primary focus of forest vegetation restoration is on forest clusters 3, 4, and 5 with a particular emphasis on dry forest in forest cluster 5. Within the clusters, the intent is to restore vegetation to appropriate conditions on high priority sites. Forest restoration is aimed at improving the range of composition, density, structure, and patterns toward those more appropriate for the forest type and restoring more typical and predictable fire and other disturbance regimes. Management tools expected to be used in restoration activities include mechanical, fire, and harvest methods.

Range vegetation restoration activity is planned at moderate to moderately low levels. The intent of range restoration is to maintain and/or improve and increase biodiversity and productivity of native range plant communities through containment of noxious weeds, management of juniper, and increased use of prescribed fire.

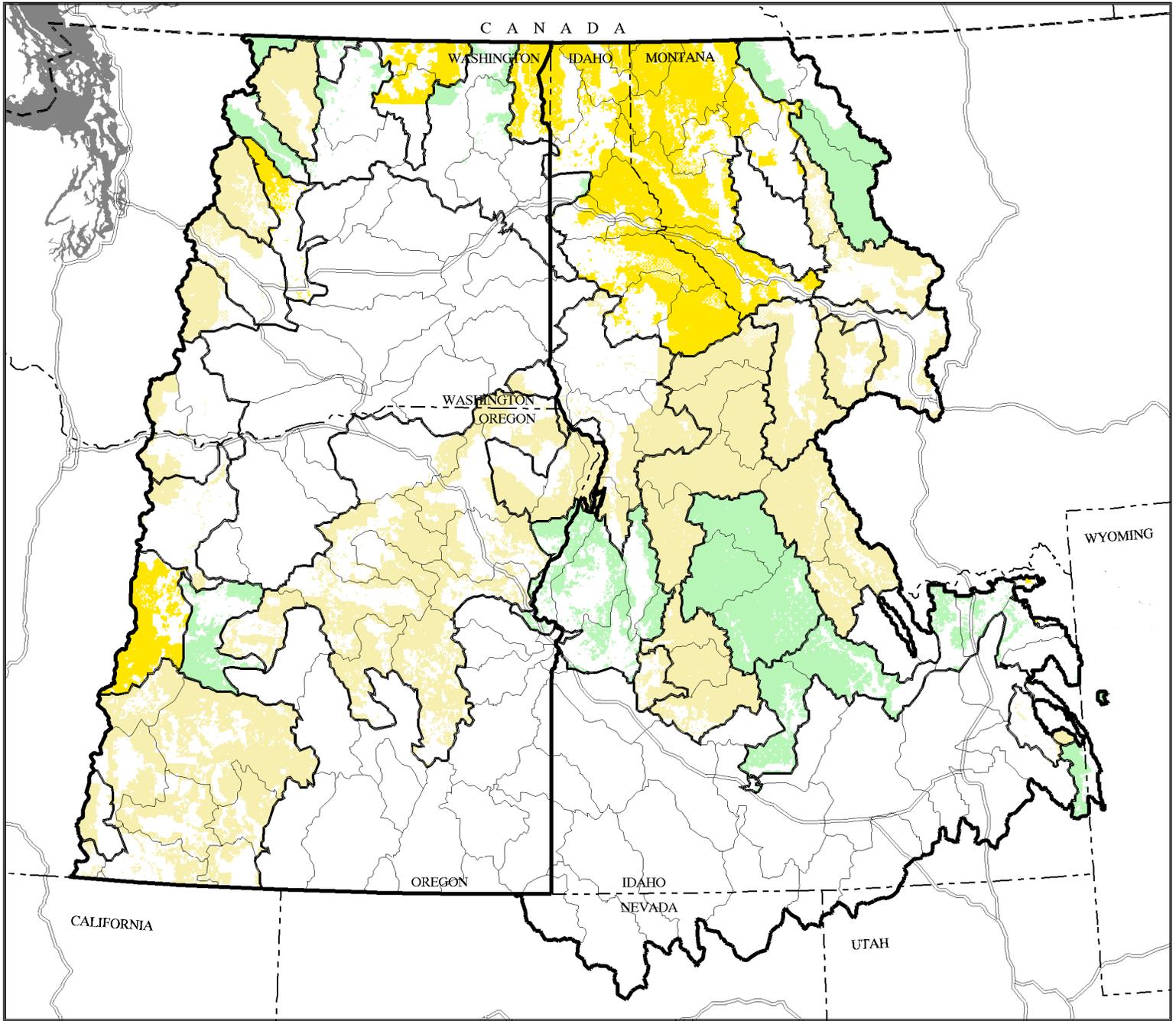
Except for forest clusters 1 and 2, forest production is expected to occur across all forest clusters in the basin at relatively moderate levels, some resulting from restoration activities. Grazing management would vary from low to high with the highest levels expected in range cluster 5. Both resource production activities are expected to be accomplished in a manner that is environmentally appropriate and supports achievement of objectives. Management of recreation, scenic integrity, and other resources and values is generally similar to Alternative 1, except where modified by direction that takes an integrated approach to protecting water, soil, aquatic, riparian, and/or terrestrial resources.

Management of habitat features important for wildlife species, within specified ranges, is aimed at maintaining (or achieving) viable vertebrate populations.

Under Alternative 3, the aquatic strategy is based on objectives for three subbasin categories (see Map 2-25) and RCAs and RMO values from PACFISH and INFISH. Resource management direction is similar to PACFISH and INFISH. The aquatic conservation focus is to conserve Category 1 subbasins, protect or restore habitat for wild chinook salmon and steelhead, native trout strongholds, and other listed and special status riparian dependent or aquatic species and protect or restore water quality to support beneficial uses. Potential ecosystem analysis areas are shown on Map 3-8.

Desired Range of Future Conditions

In addition to the desired range of future conditions elements common to all action alternatives, the following is the vision of the long-term (50 to 100 years) condition of the land under Alternative 3:



**Map 3-6.
Alternative 3
Management Emphasis
for Forest Clusters**

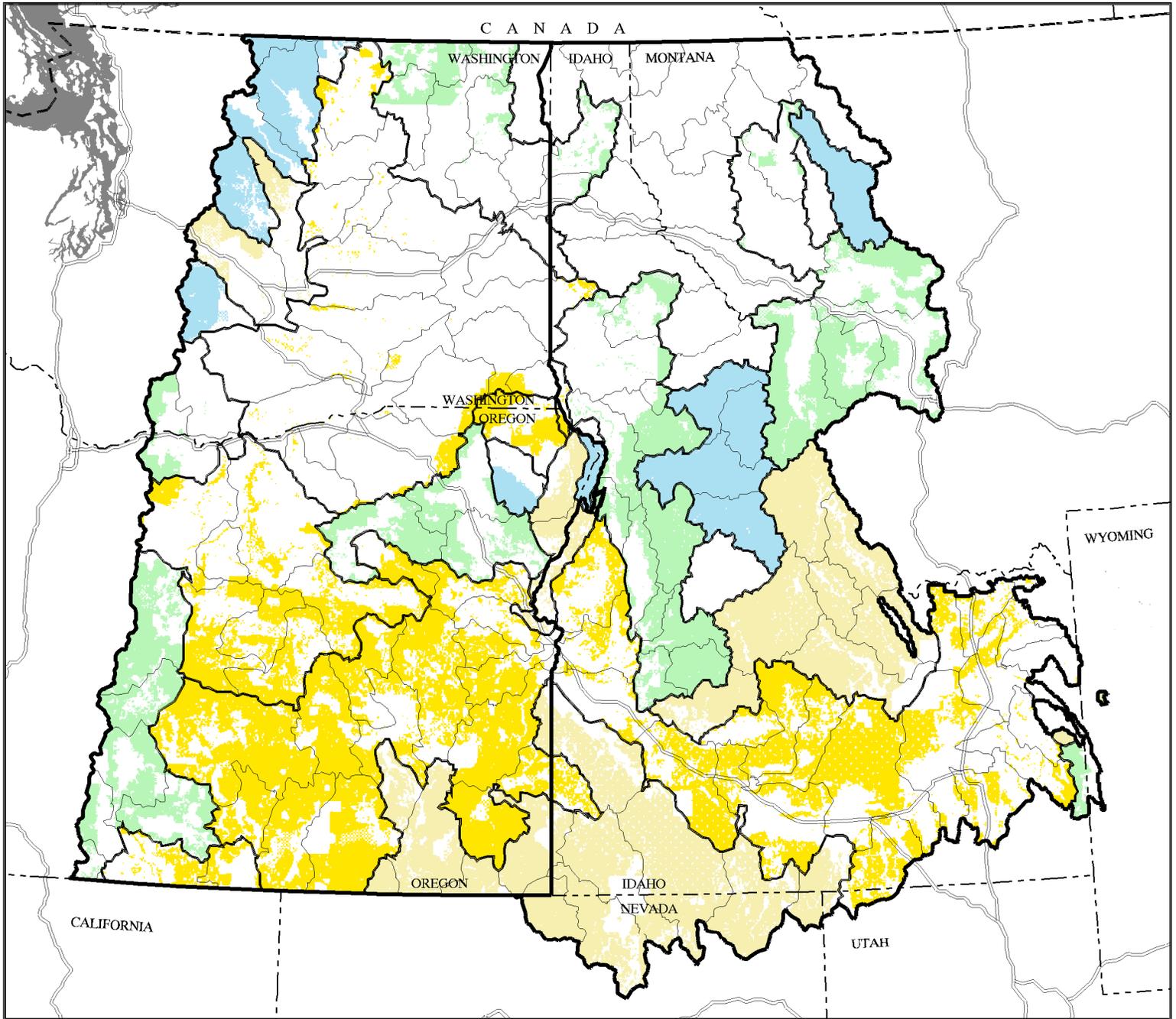
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Project Area
1996



- | | |
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|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |



Map 3-7.
Alternative 3
Management Emphasis
for Range Clusters

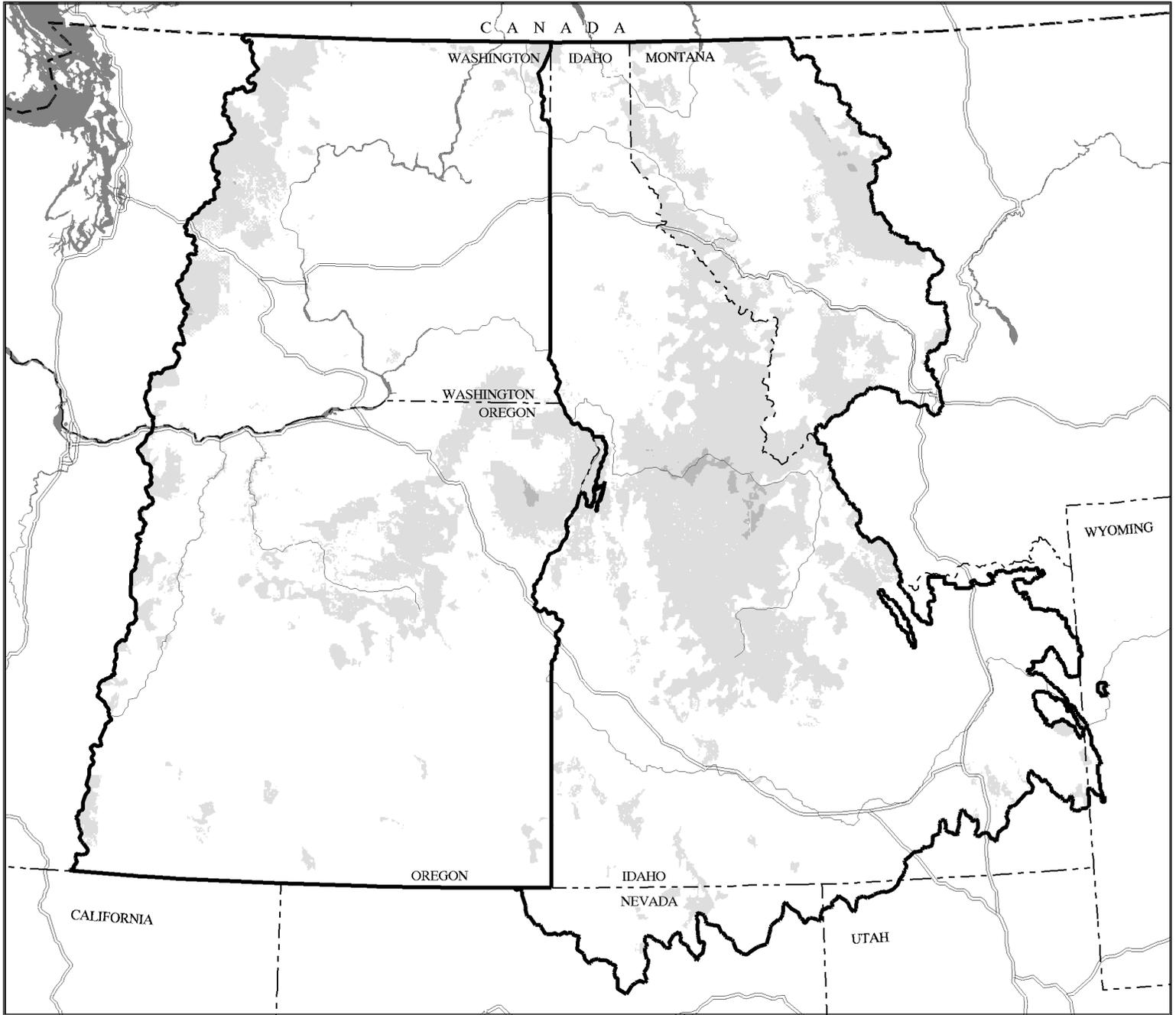
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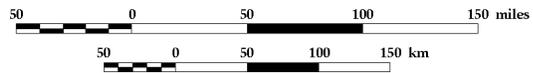
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|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |



Map 3-8.
Alternative 3
Potential Areas for Ecosystem Analysis
at the Watershed Scale

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | | | |
|---|---|---|-----------------|
|  | Analysis Areas |  | Major Rivers |
|  | Analysis required for human-ignited prescribed fire |  | Major Roads |
| | |  | EIS Area Border |

Ecosystem Analysis at the Watershed Scale is required before management activities in Category 1 sub-basins or in stronghold subwatersheds, bull trout fringe subwatersheds, subwatersheds containing wild populations of steelhead or ocean-type or stream-type chinook salmon, or Snake River salmon, or bull trout High Priority Watersheds.

Terrestrial Ecosystems~ Forestlands

Dry Forest Potential Vegetation Group. In the dry forest potential vegetation groups, successional and disturbance processes are maintained through endemic insect and disease disturbances, vegetation management on high priority sites to reestablish dominance of single story ponderosa pine, and fire.

There is a moderate abundance and persistence of mature and old single story forest, dominated by stands resistant to low intensity fires, including ponderosa pine and western larch, with a moderate component of Douglas-fir and a minor component of grand fir. Stands are fairly well distributed in a mosaic of age classes (table 3-1).

Moist Forest Potential Vegetation Group.

In the moist forest potential vegetation groups, successional and disturbance processes are maintained through endemic insect and disease disturbances, windthrow often aided by root rot, vegetation management on high priority sites to reestablish western white pine, and fire.

There is a moderate abundance and persistence of young forest consisting of western white pine, western larch, and ponderosa pine with a minor component of grand fir. Stands are distributed in a mosaic of age classes (table 3-1).

Cold Forest Potential Vegetation Group. In the cold forest potential vegetation groups, successional and disturbance processes are maintained through endemic and epidemic insect and disease disturbances, vegetation management on high priority sites to reestablish whitebark pine, and fire.

There is a moderate component of young forest consisting of seral whitebark pine along with Engelmann spruce/subalpine fir. Stands are distributed in large-patch mosaics of age classes (table 3-1).

In dry and moist forest potential vegetation groups not in the rural/wildland interface zone, where an emphasis is to manage for timber production, two to three fire intervals are skipped in underburning (non-lethal) and mixed behavior fire regimes in some areas to accumulate small diameter trees in the understory and moderate closure of larger diameter overstory trees. In crown fire regimes, one to two fire intervals are skipped in some

areas to accumulate moderate diameter trees in the overstory with scattered large residual trees.

The forested potential vegetation groups have an overall range of structural stages at the landscape level as follows:

Table 3-1. Desired Seral Stages at the Landscape Level for Alternative 3

PVG	Early	Mid	Mature ¹ and Old ² Multi	Mature & Old Single	Other ³
Distribution (percentage of PVG)					
Dry	15-25	30-45	10-20	10-30	0-15
Moist	20-30	45-60	10-20	5-10	
Cold	25-35	40-50	10-20	5-15	1-2
Shade-Intolerant Species (percentage of seral stages)					
Dry	70-80	60-70	55-70	75-90	
Moist	65-75	55-65	50-60	55-70	
Cold	55-65	50-60	50-60	85-95	

¹ Mature refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.

² Old refers to ages and sizes of dominant trees that are significantly beyond what may be found at culmination of mean annual increment of tree stand volume growth.

³ Refers to understory of grasses, shrubs, and forbs.

Forest Wildlife Habitat

The needs of forest-dependent wildlife species are met by the presence of the necessary structures and composition, ecological processes, and ecosystem functions. Most habitats ensure long-term evolutionary potential of native species. Forested land contains habitat attributes of old forests. Habitats of endemics, disjunct, and centers of biodiversity of rare plant and animal species are given consideration to meet these species needs. Natural areas with high species endemism or biodiversity are present and contribute to viable populations and the delisting recovery of threatened or endangered species. Habitats are managed to prevent listing of species given special consideration by land management agencies. Amounts and distribution of habitat attributes are increased where needed, and maintained to meet the needs of endemic species and species with the largest home range requirements. Some blocks of old forest habitats connect areas of similar vegetation. Options are maintained for evolutionary processes at the edge of species

ranges for wide ranging species. Human activities are at levels that allow sufficient useable habitat for all species to be represented and well distributed, although species densities may be variable. Management activities are dispersed, except in areas following major disturbances such as large fires and insect infestations. In many forest areas, some roads are closed (seasonal or permanent), or located to achieve the desired wildlife habitat conditions.

Terrestrial Ecosystems ~ Rangelands

Rangelands reflect a mosaic of multiple-aged shrubs, forbs, and native and exotic perennial grasses. There is a slight management emphasis on maintaining a grass-dominated plant community in the shrublands, although forbs and shrubs are a substantial part of the plant community. Most seedings have been diversified by the addition of various forb and shrub species. New infestations of noxious weeds, especially when located in vegetation types highly susceptible to invasion, are controlled, but some existing large infestations remain and continue to spread along their boundaries. Control that results in some reduction of existing large infestations is prioritized at a site-specific level and directed by local input, especially for species that are problematic on a project area-wide level (yellow starthistle, diffuse knapweed, spotted knapweed, and leafy spurge).

Western juniper and conifers are being reduced by various treatments on rangelands. New invasions as well as existing juniper and conifer dominated sites are being treated.

Prescribed burning and prescribed natural fire is apparent, although the burning is not continuous and is prescribed as mosaic. Altered sagebrush steppe is maintained at existing levels with emphasis on preventing the spread of cheatgrass to adjacent areas. Greenstripping and other fire breaks are apparent along roads and along the altered sagebrush steppe boundaries.

Dry Grass Potential Vegetation Group.

Forty to 60 percent of the fires in this group are nonlethal, burning in herbaceous vegetation at less than 25-year intervals. The remaining fires are lethal, or mixtures of nonlethal and lethal, causing mortality of overstory shrubs or conifers. Fifty to 70 percent of the area is dominated by native grasses and forbs with minimal conifer and shrub encroachment.

Dry Shrub Potential Vegetation Group.

Forty to 60 percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Five to 20 percent of the area is dominated by native grass and forb communities. The remaining area is dominated by dense shrub communities with declining herbaceous layers, by annual grasses, or by seedings of exotic grasses and other plants.

Cool Shrub Potential Vegetation Group.

Fifty to 70 percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Ten to 30 percent of the area contains mixtures of perennial grasses and forbs. Conifers are dominant on less than 20 percent of the area.

Rangeland Wildlife Habitat

Rangelands have the necessary structure and composition, ecological processes, and ecosystem functions to meet most needs of Federal and State listed and sensitive rangeland-dependent wildlife species. To enhance wildlife forage production, maintenance of native perennial bunchgrass is ongoing. Natural Areas and areas of high species endemism or biodiversity are present and contribute to viable populations, but gains in viable populations are moderate. Vegetation is appropriate for the site with multiple age classes of shrubs and grass being common. These habitats are becoming less fragmented and more connected due to increasing abundance of native vegetation. Blocks of similar habitats are fairly well connected with areas of similar vegetation. Human activities are at a level that allows most species to maintain a desired distribution, but species densities may be low. In many rangeland areas, roads are closed or located to achieve the desired resource conditions. In some situations, human activities require seasonal restrictions in selected habitats.

Aquatic Ecosystems

Riparian areas in proper functioning condition are managed to maintain at least that condition, within their site potential, with no downward trends. Tall trees, moderate or large in diameter, within riparian areas are apparent. Most riparian areas are connected to the streams and uplands, unfragmented by roads and openings, and free of barriers to species migration. On rangelands, most riparian area soils are

vegetated with native deep-rooted plants and shrubs. Riparian woodlands are increasing on forested lands. Wetlands are stable and common across the lower gradient valley bottoms.

Forested streams in category 2 and portions of category 3 sub-basins are moderately productive and habitat is becoming complex and diverse, supporting native aquatic species. Instream, bank, and overhead cover, and structure provided by large wood and willows, are moderate and increasing. Large deep pools in lower gradient streams are fairly common. Rangeland streams and forested streams in portions of category 3 subbasins are moderate in productivity, and have habitat that is mostly complex and diverse, supporting aquatic species. Instream, bank, and overhead cover, and structure provided by large wood and willows, are moderate.

Minor portions of the landscape have minimal protective soil cover, organic matter, and coarse woody material.

Roads in riparian areas are infrequent and stable. Few road corridors from new roads are apparent. The landscape is generally fragmented in appearance.

Aquatic Species Habitat

Water quality and aquatic habitat are moving towards watershed, riparian, and aquatic habitat goals within category 2 and portions of category 3 sub-basins. Restoration strategies are implemented on nearly all high-risk sites within category 2 subbasins, allowing recovery of watershed, riparian, water quality, and aquatic conditions characteristic for the geoclimatic setting. Improved aquatic habitat conditions allow threatened or endangered (TES) aquatic species populations to stabilize and expand. Major river corridor habitat and water quality conditions are improving.

The following desired range of future conditions applies to Forest Service- or BLM-administered lands:

- ◆ Water quality to a degree that provides for stable and productive riparian and aquatic ecosystems;
- ◆ Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume,

and character of sediment input and transport) under which the riparian and aquatic ecosystems developed;

- ◆ Instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;
- ◆ Natural timing and variability of the water table elevation in meadows and wetlands;
- ◆ Diversity and productivity of native and desired non-native plant communities in riparian zones;
- ◆ Riparian vegetation to: (a) provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems; (b) provide adequate summer and winter thermal regulation within the riparian and aquatic zones; (c) help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.
- ◆ Riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geoclimatic region;
- ◆ Habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

Human Uses and Values

- ◆ Social and economic systems are minimally affected by adjustments or updates to Forest Service or BLM land-use plans.
- ◆ Local public needs and desires continue to influence levels of commodity and non-commodity outputs.
- ◆ Customary uses continue and stability improves for the participant customers (firms, ranches, etc.).
- ◆ Reductions in commodity outputs are minimized and reflect either changes in ecosystem health or minimum levels needed to achieve compliance with applicable laws and regulations.
- ◆ Payments to local units of governments continue and generally are stable within a normally accepted range.

Alternative 4

Theme

This alternative is designed to aggressively restore ecosystem health through active management, the results of which resemble endemic disturbance processes including insects, disease, and fire. The alternative focuses on short-term vegetation management to improve the likelihood of moving towards or maintaining ecosystem processes that function properly in the long term. Vegetation management is designed to reduce risks to property, products, and economic and social opportunities that can result from large epidemic disturbance events. Direct involvement with other federal agencies, and State, county, and tribal governments will be used in planning, decision-making, and implementation of programs.

Priority in this alternative is placed on forest, rangeland, and watershed health, assuming that healthy streams, wildlife populations, and economic and social benefits will follow. Actions taken to achieve desired conditions are designed to produce economic benefits whenever practical. A wide variety of management tools are available under this alternative.

What is the Design of Alternative 4?

Restoration strategies are applied in all forest clusters, except forest cluster 1, which has a Conserve/Restore emphasis, and all range clusters except range cluster 2, which also has a Conserve/Restore emphasis. See maps 3-9 and 3-10.

Activity tables (tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 4 were selected.

Emphasis is on a high level of restoration where the dry and/or moist forests are the dominant type. Cold forest types are generally moderate level of restoration.

Restoration on rangelands is generally moderate to moderately high. The emphasis is on active restoration of cool shrublands, dry shrublands, and dry grasslands communities. See table below.

Much of the short-term forest outputs will result from restoration activity. Grazing lands are generally at moderate levels, except for range cluster 2 and 3, which are low. On rangelands, restoration activities are expected to lead to improved range productivity which may lead to some opportunity for increased grazing. Management of recreation, scenic integrity, and other resources and values is encouraged but may be affected by restoration or protection requirements.

In Alternative 4, restoration is aimed at achieving or maintaining a moderate to high amounts of habitats and their associated features within desired ranges, important for animals and plants.

The aquatic strategy for Alternative 4 features objectives for three subbasin categories and RCAs and RMO values developed from information collected for the *Scientific Assessment*. Resource management direction is similar to Alternative 3. The aquatic strategy is aimed at conservation of Category 1 subbasins; maintenance of water quality; and restoration, maintenance, and protection of riparian-dependent and aquatic species habitat. Subbasin review is used to strategically prioritize watersheds for Ecosystem Analysis which provides the context and coordination to accomplish protection or restoration of aquatic and riparian resources and water quality. This alternative places emphasis on a high rate of watershed restoration to improve stream, riparian, soil and upland process and functions.

Alternative 4 - Management Emphasis Within Forest and Range Clusters for the Project Area

Management Emphasis	Forest Cluster		Range Cluster	
	% of Forest Cluster	Cluster No.	% of Range Cluster	Cluster No.
Conserve/Restore	10	1	8	2
Restore	90	2, 3, 4, 5, 6	92	1, 3, 4, 5, 6

Map 3-11 shows areas under Alternative 4 where ecosystem analysis is potentially required.

Watershed restoration is moderate for Forest Clusters 3, 4, and 5 and high for Forest Clusters 1 and 2; riparian restoration is at moderate levels for all clusters. In riparian-wetland areas, achievement and maintenance of Proper Functioning Condition or better is expected. Road density reductions is generally moderate, except in Forest and Range Clusters 1 and 5 (low road density reduction in Forest Cluster 1 and Range Cluster 5; high in Forest Cluster 5 and Range Cluster 1).

Desired Range of Future Conditions

In addition to the desired range of future conditions elements common to all action alternatives, the following is the vision of the long-term (50 to 100 years) condition of the land under Alternative 4.

Terrestrial Ecosystems~ Forestlands

Dry Forest Potential Vegetation Group.

In the dry forest potential vegetation groups, early successional stages are maintained and disturbance processes are restored through aggressive vegetation management, endemic insect and disease disturbances, and fire.

There is an abundance and persistence of mature and old single story forest stands resistant to low intensity fires, dominated by ponderosa pine and western larch, with a moderate component of Douglas-fir and a minor component of grand fir. Stands are well distributed in a mosaic of age classes (table 3-2).

Moist Forest Potential Vegetation Group.

In the moist forest potential vegetation groups, early successional stages are maintained and disturbance processes are restored through aggressive vegetation management; endemic insect and disease disturbances; windthrow, often aided by root rot; and fire.

There is an abundance and persistence of mature and old forest dominated by Douglas-fir, lodgepole pine, and ponderosa pine in the single story structural stage. Early successional western white pine dominates the young forest structural stage. Stands are well distributed in a mosaic of age classes (table 3-2).

Cold Forest Potential Vegetation Group.

In the cold forest potential vegetation groups, early successional stages and disturbance processes are maintained through endemic insect and disease disturbances, vegetation management, and fire.

There is an abundance and persistence of mature and old forest dominated by lodgepole pine and Douglas-fir in the multi-story structural stage, and the young forest stages are dominated by early successional whitebark pine with a moderate component of Engelmann spruce/subalpine fir. Stands are distributed in large-patch mosaics of age classes (table 3-2).

The forested potential vegetation groups have an overall range of structural stages at the landscape level as follows:

Table 3-2. Desired Seral Stages at the Landscape Level for Alternative 4

PVG	Early	Mid	Mature ¹	Mature	Other ³
			and Old ²	& Old	
Distribution (percentage of PVG)					
Dry	10-20	30-40	10-20	20-30	0-15
Moist	20-35	40-50	15-25	5-10	
Cold	20-30	45-55	10-20	5-15	1-2
Shade-Intolerant Species (percentage of seral stages)					
Dry	70-80	65-75	60-75	85-95	
Moist	65-80	60-70	60-70	65-80	
Cold	60-70	50-60	45-55	75-85	

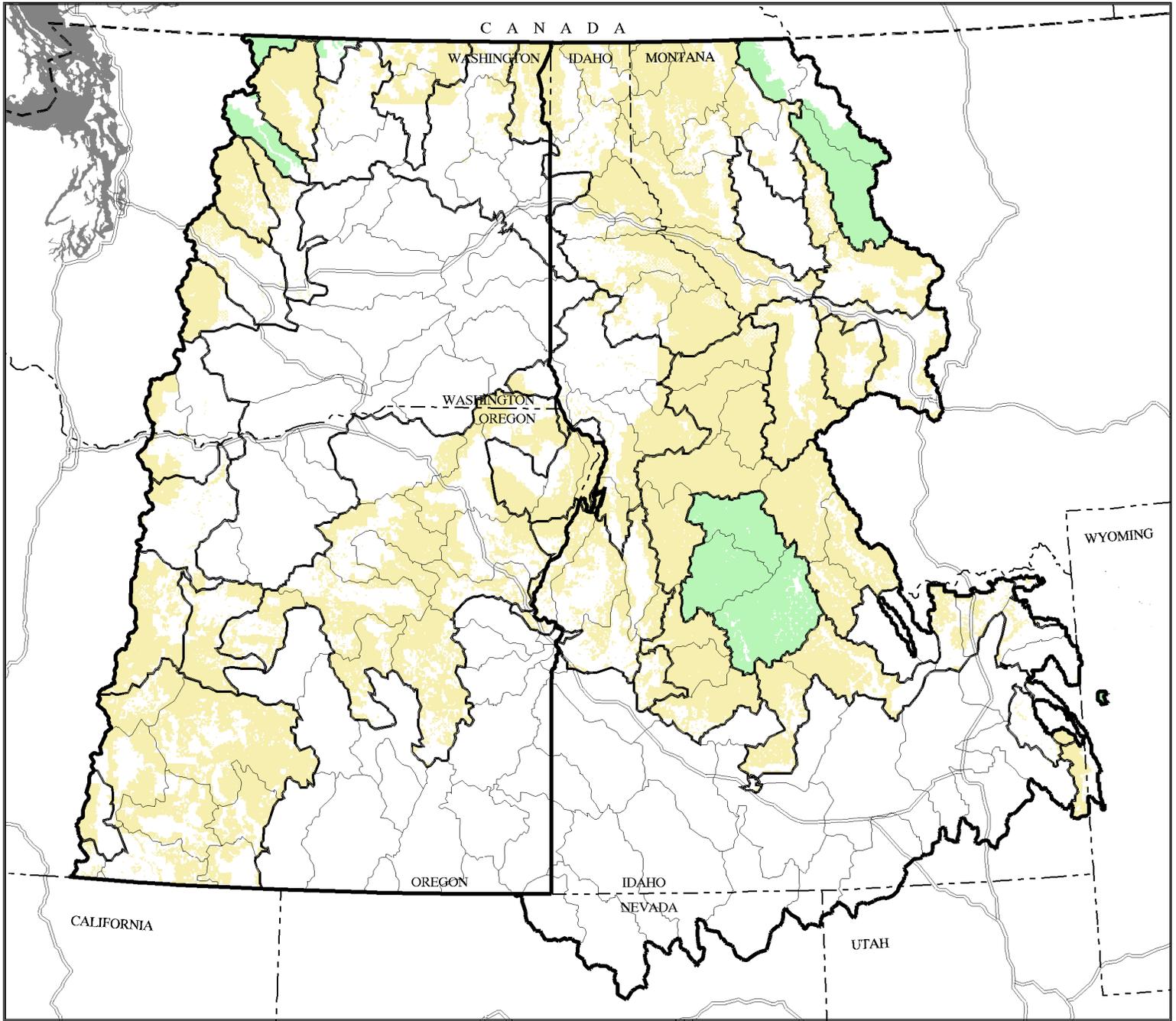
¹ Mature refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.

² Old refers to ages and sizes of dominant trees that are significantly beyond what may be found at culmination of mean annual increment of tree stand volume growth.

³ Refers to understory of grasses, shrubs, and forbs.

Forest Wildlife Habitat

The needs of forest-dependent wildlife species are met by the structure and composition, ecological processes, and ecosystem functions. Habitats ensure long-term evolutionary potential of native species. Habitat attributes of old forests are abundant. Habitats of endemics, disjunct species, and centers of biodiversity of rare plant and animal species are being managed to meet these species needs. Natural Areas with



Map 3-9.
Alternative 4
Management Emphasis
for Forest Clusters

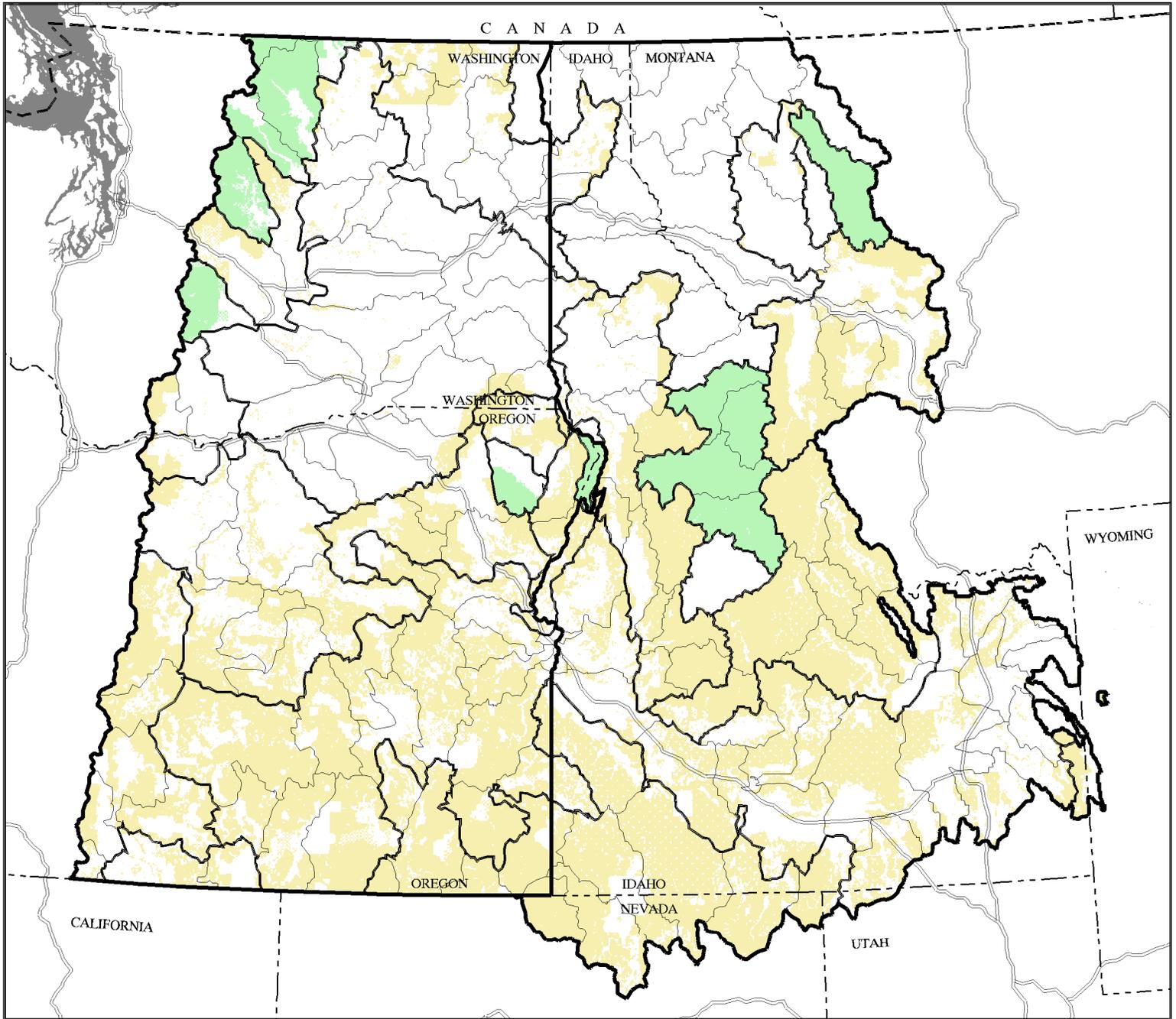
*BLM and Forest Service
 Administered Lands Only*

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |

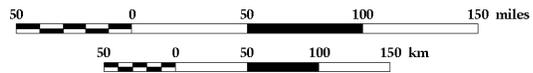


Map 3-10.
Alternative 4
Management Emphasis
for Range Clusters

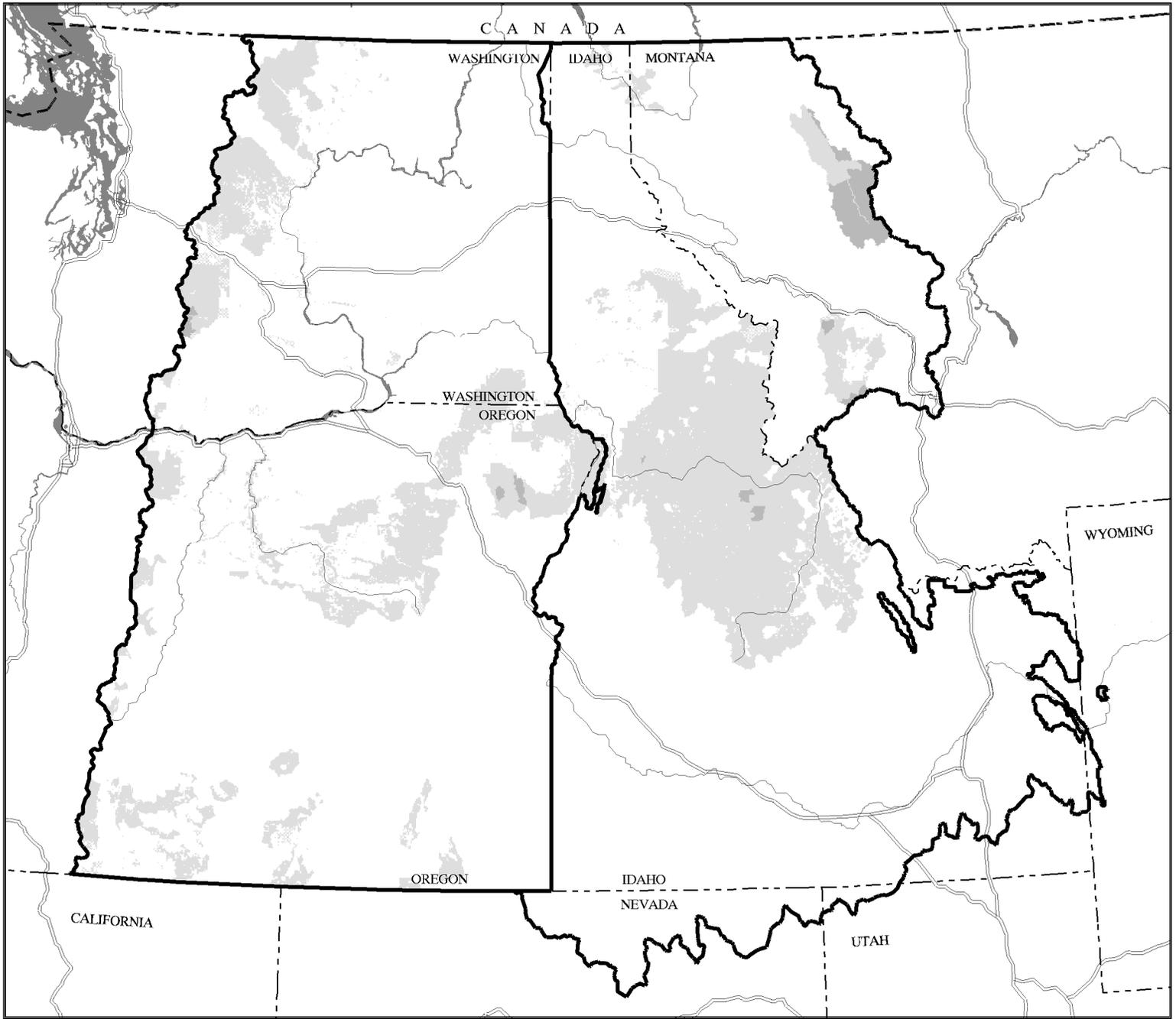
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 Administered Lands Only*

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



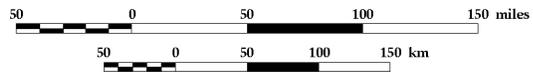
- | | | | |
|---|--------------------|---|--------------------|
|  | Conserve |  | 4th HUC Boundaries |
|  | Conserve / Restore |  | Major Roads |
|  | Restore |  | EIS Area Border |
|  | Restore / Produce |  | Cluster Boundary |
|  | Produce | | |
|  | Produce / Conserve | | |



Map 3-11.
Alternative 4
Potential Areas for Ecosystem Analysis
at the Watershed Scale

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



-  Analysis Areas
-  Analysis required for human-ignited prescribed fire
-  Major Rivers
-  Major Roads
-  EIS Area Border

Ecosystem Analysis at the Watershed Scale is required before management activities in Category 1 sub-basins or prior to management activities that would affect federally listed and proposed species (not mapped) or recently occupied or currently accessible habitat of federally listed and proposed fish species.

high species endemism or biodiversity are common and contribute to viable populations and the delisting of threatened or endangered species. Habitats prevent the need for listing of species given special consideration by land management agencies. Management is designed to increase amounts and distribution of habitat attributes where needed to be sufficient to meet the needs of endemic species and species with the largest home range requirements. Blocks of old forest habitats are large and well connected with areas of similar forest types. Habitat maintains options for evolutionary processes at the edge of all species ranges. Human activities are at levels that allow most species to maintain a desired distribution in forested environments. In the long term, management activities are dispersed and infrequent; in the short term, management activities are common. In many forest areas, many roads are closed (seasonal or permanent), or located to achieve the desired wildlife habitat conditions.

Terrestrial Ecosystems~ Rangelands

Rangelands reflect a mosaic of multiple-aged shrubs, forbs, and native grasses with management emphasis on maintaining a diverse native plant community. Most seedlings have been diversified by the addition of various native grasses, forbs, and shrubs, and have been converted to native plants where desirable. New infestations of noxious weeds are not common across the landscape and existing large infestations are slowly declining.

Western juniper-dominated sites are rare across the rangelands. The exception to this is rock outcrops, ridges, mesas, or other areas not prone to fire, which typically have shallow soils with little accumulation of fine fuels. Some areas have diverse plant communities with low densities of western juniper as well as a full complement of native understory shrubs, grasses, and forbs. Conifers are not dominating rangeland areas such as dry grassland.

Prescribed burning and prescribed natural fire have maintained the diverse, mosaic shrub steppe plant communities as well as the grassland communities that are subject to conifer encroachment. Most of the altered sagebrush steppe consists of diverse perennial plant communities, with the grass components dominated by both native and exotic perennial grasses. Greenstripping and other fire breaks

are still apparent along roads and along the remaining altered sagebrush steppe boundaries.

Dry Grass Potential Vegetation Group.

Sixty to 80 percent of the area is dominated by native grasses and forbs without conifer and shrub encroachment.

Dry Shrub Potential Vegetation Group.

Fifty to 70 percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Ten to 25 percent of the area is dominated by native grass and forb communities. The remaining area is dominated by closed shrub communities with declining herbaceous layers, by seedlings of exotic and native grasses and other plants, and in a small area by annual grasses and noxious weeds.

Cool Shrub Potential Vegetation Group.

Sixty to 80 percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Fifteen to 40 percent of the area contains mixtures of perennial grasses and forbs. Closed canopy sagebrush and conifers dominate the remaining area.

Rangeland Wildlife Habitat

Rangelands have the necessary structure and composition, ecological processes, and ecosystem function to meet most needs of Federal and State listed and sensitive rangeland-dependent wildlife species. The distribution of different amounts and ages of shrubs, grassland, and woodland are approaching desired levels in a mosaic pattern. Rehabilitation or restoration of native shrub communities are accomplished where site potential permits to enhance wildlife habitat. Natural areas and areas of high species endemism or biodiversity are common and contribute to viable populations, but gains in viable populations are moderate. Vegetation is appropriate for the site with multiple age classes of shrubs and grass being common. These habitats are becoming less fragmented and more connected due to increasing abundance of native vegetation. Areas are large and connected with other areas of similar vegetation to maintain species distribution and densities that are closely associated with rangeland habitats. Human activities are at a level that allows species to maintain expected distribution, but some species densities may be low due to human activities. In many areas roads are closed or located to reduce habitat fragmentation and

reduce human disturbance; road densities are low in many areas. Blocks of similar habitats are large and connect with areas of similar vegetation. In many areas roads are closed (seasonally or permanently) or located to achieve the desired wildlife habitat conditions.

Aquatic Ecosystems

Watershed Processes

Riparian areas are resilient, diverse, and functioning within their site potential. Riparian areas in proper functioning condition are managed to maintain at least that condition with no downward trends, and there is an annual increase in the number of areas functioning at risk that show an upward trend toward proper functioning condition. Less resilient and more sensitive areas are recovering. Tall trees, moderate or large in diameter, within riparian areas are fairly frequent. Riparian areas are covered by protective vegetation and generally connected with their streams and upslopes.

Most soils have protective cover, adequate levels of soil organic matter, and coarse woody material distributed in varying sizes and types. Soils also have adequate physical properties for vegetation growth and hydrologic function. Physical, chemical, and biological processes in all soils function similarly to soils that have not been harmfully disturbed.

Roads in riparian areas are few and stable. Roads exist in riparian areas only under the following circumstances: where needed for major public transportation thoroughfares, where they do not cause problems to aquatic and riparian resources, or where there are no other practical alternatives. Some road corridors from new roads are apparent, but roads in sensitive landscapes are few and stable. There is moderate-to-strong evidence of human management activity across the landscape.

Aquatic Species Habitat

Restoration strategies are implemented on nearly all high risk sites within category 2 and portions of category 3 sub-basins, promoting recovery of watershed, riparian, water quality, and aquatic conditions characteristic for that geoclimatic setting. Improved aquatic habitat conditions allow threatened and endangered aquatic species populations to stabilize and expand into

previously occupied habitat. Native aquatic species population's strongholds are increasing across the project area. Major river corridor conditions allow most aquatic species to achieve their full life cycles.

The following desired range of future conditions applies to Forest Service- or BLM-administered lands:

- ◆ Water quality provides for stable and productive riparian and aquatic ecosystems;
- ◆ Sediment regimes that are appropriate to geoclimatic setting. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport;
- ◆ Hydrologic regimes in streams, lakes, and wetlands appropriate to the geoclimatic setting. Important elements of the hydrologic regime include those processes necessary to sustain proper channel form and riparian, aquatic, and wetland habitats and to allow proper patterns of sediment, nutrient, and wood routing. This includes the timing, magnitude, duration, and spatial distribution of peak, high, and low flows;
- ◆ Instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;
- ◆ Natural timing and variability of the water table elevation in meadows and wetland;
- ◆ Diversity and productivity of native and desired non-native plant communities in riparian zones;
- ◆ Riparian vegetation to: (a) provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems; (b) provide adequate summer and winter thermal regulation within the riparian and aquatic zones; (c) help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed;
- ◆ Riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geoclimatic region;
- ◆ Habitat supports viable populations of native plant, invertebrate, and vertebrate aquatic and riparian-dependent species, including threatened and endangered species, that are well distributed within their historical ranges;

- ◆Habitat supports harvestable populations of native aquatic and riparian-dependent species of commercial, cultural, and recreational significance;
- ◆Habitat supports desired recreational fishing opportunities for non-native species where they will not further erode native species status or prevent attainment of objectives for native species;
- ◆The distribution, diversity, and complexity of watershed and landscape-scale features are maintained and restored to ensure protection of the aquatic systems to which species populations and communities are uniquely adapted;
- ◆Spatial and temporal connectivity within and between watersheds are maintained and restored. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact strongholds. These connections will provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

firm to obtain social and economic benefits from sustained levels of management projects and restoration actions;

- ◆Local public needs and desires are reconciled with the Federal agencies' ecosystem restoration needs and opportunities; and
- ◆Payments to local units of governments continue within an acceptable range based on local conditions and need for restoration.

Alternative 5

Theme

This alternative emphasizes production of goods and services at the subregional level consistent with the principles of ecosystem management. Biological capability and economic efficiency are used to determine relative priority uses for an area, rather than local demands and traditional uses. Areas that are best able to produce products, goods or services, or desired conditions are targeted to do so within the ecological capability of the area. Other uses also are expected to exist when they do not conflict with or diminish the priority uses. While a full range of conditions, products, and services may not be provided in all localities, the desired range of conditions, products, and services will be met on a regional (project area) basis. Direct involvement with other federal agencies, and

Human Uses and Values

- ◆Social and economic systems have adjusted (in some locations grown) to the changed amounts and product mix of commodity and non-commodity outputs. Enhanced forest, range, riparian, and aquatic ecosystems enable individuals and

Alternative 5 - Management Emphasis Within Forest and Range Clusters for the Project Area

Management Emphasis	Forest Cluster		Range Cluster		Forest Cluster	Range Cluster
	% of Forest Cluster	Cluster No.	% of Range Cluster	Cluster No.		
Conserve	10	1	7	2	Recreation/Aquatics	Recreation/Aquatics
Conserve/Restore	15	2	25	3	Aquatics/Recreation	Recreation/Wildlife
Restore	39	3, 5	NA	NA	Aquatics/Timber/ Livestock	NA
Restore/Produce	18	6	35	1, 6	Wildlife/Recreation	Livestock/Timber/ Wildlife
Produce	18	4	NA	NA	Timber/Wildlife	NA
Produce/conserve	NA	NA	33	4, 5	NA	Wildlife/Livestock/ Recreation

State, county, and tribal governments will be used in planning, decision-making, and implementation of programs.

In this alternative, both EIS teams (UCRB and Eastside) identified areas across the project area best able to produce products, goods, services, or desired conditions, within the ecological capability of the land. Five major priority areas were considered: timber, livestock, aquatic resources, wildlife, and recreation. The assumption used in building this alternative was that each forest and range cluster has a primary priority and some have a secondary priority. Other uses are likely to occur, but any conflicts would be resolved in favor of the priority uses of the area.

What is the Design of Alternative 5?

Because of the unique approach undertaken in Alternative 5, each forest and range cluster has both management emphasis (see maps 3-12 and 3-13) and management priority (see maps 3-14 and 3-15).

Activity tables (tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 5 were selected.

As seen in the table below, forest clusters 1 and 2 and range clusters 2 and 3 promote Conserve strategies and recreation and/or aquatic resource management emphasis. Generally under these approaches, disturbance is allowed to play a more natural role in maintaining or achieving ecological integrity. Under the Conserve strategy, the level of management activity is generally low, except moderate levels of watershed restoration and use of prescribed fire. Prescribed fire is the primary tool in maintaining appropriate vegetative conditions for the given environment.

Most of the other clusters focus on production and/or restoration, often with a timber and/or livestock grazing priority. Where timber and livestock production are a primary priority, natural large-scale disturbances will be prevented to protect high resource values. The approach emphasizes reduced fire hazards, particularly in the wildland/urban interface.

On areas with wildlife, aquatics, and recreation as a primary priority (forest clusters 1, 2, 3 and

6), the intent is to protect, maintain and/or restore habitats for native and non-native animals and plants and for ecological processes and functions.

On forest clusters where timber and livestock production receive priority, habitat is designed (similar to Alternative 3) and activities mitigated to maintain minimum habitat components for viable populations. Where wildlife is a secondary priority, habitat components may be maintained above those necessary for minimum viable populations.

In the timber and/or livestock priority areas, the basic aquatic strategy is to conserve remaining fish strongholds and high quality habitat and water, while producing high output levels of timber and forage. Map 3-16 shows areas under Alternative 5 where ecosystem analysis is potentially required as part of the aquatic strategy.

Desired Range of Future Conditions

In addition to the desired range of future conditions elements common to all action alternatives, the following is the vision of the long-term (50 to 100 years) condition of the land under Alternative 5:

Terrestrial Ecosystems~ Forestlands

Dry Forest Potential Vegetation Group.

In the dry forest potential vegetation groups, early successional stages and disturbance processes are maintained through vegetation management, endemic insect and disease disturbances, and fire.

There are either large patches dominated by young forest and mature and old multi-story forests within timber priority areas, or a mosaic of age classes composed of ponderosa pine and Douglas-fir in other priority areas (table 3-3).

Moist Forest Potential Vegetation Group.

In the moist forest potential vegetation groups, early successional stages and disturbance processes are maintained through intensive vegetation management, endemic insect and disease disturbances, windthrow often aided by root rot, and fire.

There are either large patches of young forest and mature and old multi-story forest within timber priority areas, or a mosaic of age classes

in the other priority areas (table 3-3). Early successional western white pine dominates the young forest structural stage.

Cold Forest Potential Vegetation Group.

In the cold forest potential vegetation groups, early successional stages and disturbance processes are maintained through endemic and epidemic insect and disease disturbances, and minimal vegetation management.

There is a high abundance and persistence of mature and old forest dominated by lodgepole pine and Douglas-fir in the multi-story structural stage. The young forest stages have a moderate component of early successional whitebark pine and Engelmann spruce/subalpine fir. Stands are well distributed in a mosaic of age classes (table 3-3).

In dry and moist forest potential vegetation groups outside the rural/wildland interface, where there is an emphasis to manage for timber production, underburns and/or thinning is used to minimize stand-replacing and mixed severity wildfires. The fire regime can be lengthened in young forests to allow establishment of fully stocked stands with moderate crown closure. In cold potential vegetation groups, underburns and/or thinning can be used to produce moderate to large diameter trees.

The forested potential vegetation groups have an overall range of structural stages at the landscape level as seen in table 3-3.

Forest Wildlife Habitat

Forested *wildlife priority areas* have the necessary forest structure and composition, ecological processes, and ecosystem function to meet the needs of *all species* associated with forest communities. Areas of habitat are extensive and maintained to assure species distribution and densities associated with forest habitats. Habitats ensure long-term evolutionary potential of native species. Forested land contains habitat attributes of old forests which connect with areas of similar vegetation. Habitats are managed to prevent listing of species given special consideration by land management agencies. Habitats of endemics, disjunct species, and rare plant and animal species and centers of biodiversity are being managed to meet these species needs. Human activities are at levels that allow sufficient

Table 3-3. Desired Seral Stages at the Landscape Level for Alternative 5

PVG	Early	Mid	Mature ¹ and Old ² Multi	Mature & Old Single	Other ³
Distribution (percentage of PVG)					
Dry (W)	10-25	35-45	15-25	10-20	0-15
Dry (O)	15-25	30-45	10-20	10-30	
Moist (W)	20-30	45-60	10-25	2-7	
Moist (O)	20-30	45-60	10-20	5-10	
Cold (W)	25-35	40-50	10-20	5-15	1-2
Cold (O)	25-35	40-50	10-20	5-15	
Shade-Intolerant Species (percentage of seral stages)					
Dry (W)	80-90	65-75	65-75	75-90	
Dry (O)	70-80	60-70	55-70	75-90	
Moist (W)	65-80	60-70	60-70	55-70	
Moist (O)	65-75	55-65	50-60	55-70	
Cold (W)	55-65	50-60	55-65	90-100	
Cold (O)	55-65	50-60	50-60	85-95	

¹ Mature refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.

² Old refers to ages and sizes of dominant trees that are significantly beyond what may be found at culmination of mean annual increment of tree stand volume growth.

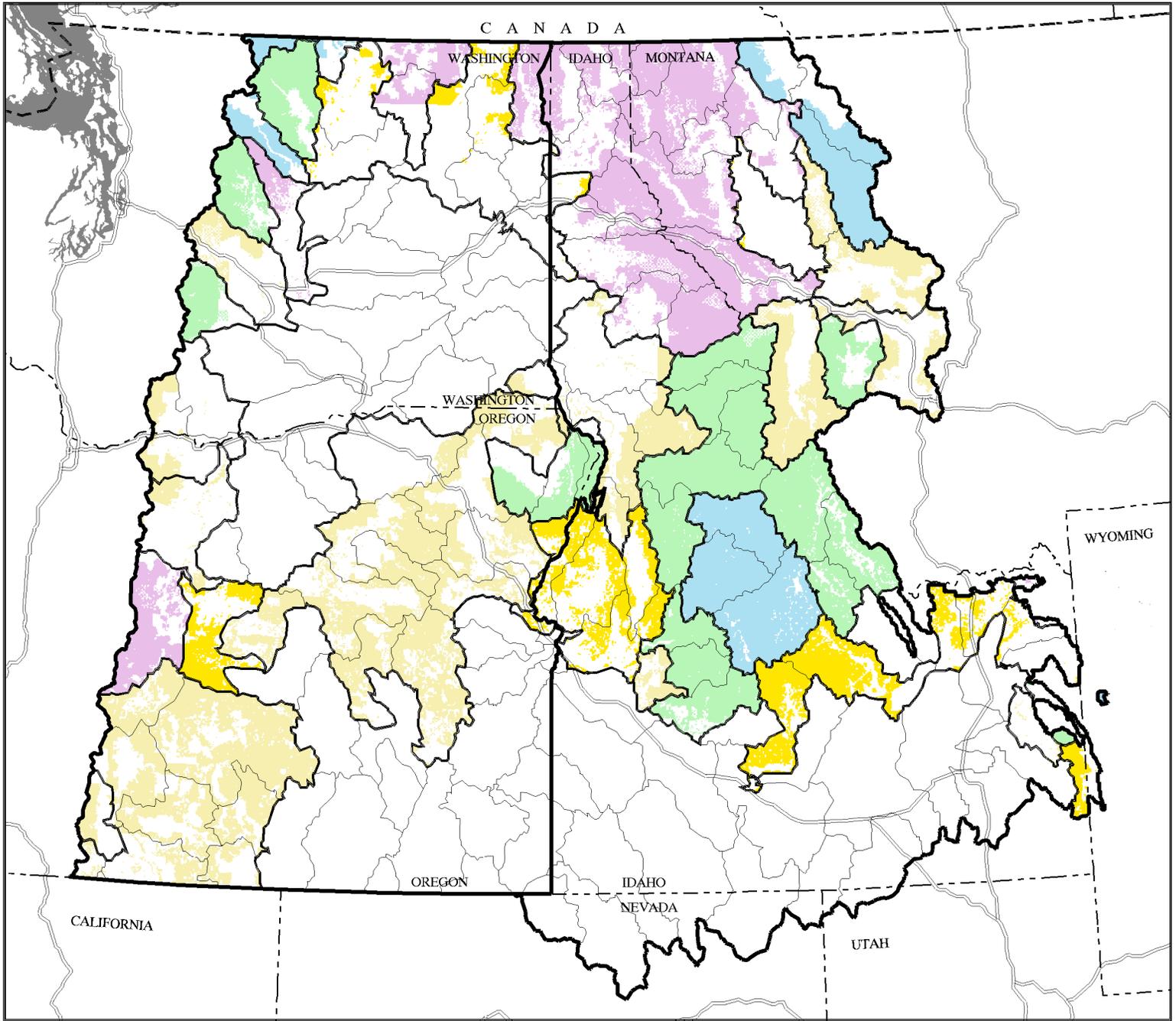
³ Refers to understory of grasses, shrubs, and forbs.

(W) = within timber priority areas;

(O) = outside of timber priority areas.

useable habitat for most species to be represented and well distributed in forested environments. Habitat maintains options for evolutionary processes at the edge of species ranges. Management activities occur primarily in areas of major disturbances. Roads are few.

In forest potential vegetation groups, *other priority areas* have the necessary forest structure and composition, ecological processes, and ecosystem function to meet the needs of *most* forest-dependent wildlife species, but species densities are low. Forested land contains habitat attributes of old forests which are mostly connected with areas of similar vegetation. Human activities are at levels that allow most species to maintain a desired distribution in forested environments. Management activities occur primarily in areas of major disturbances.



Map 3-12.
Alternative 5
Management Emphasis
for Forest Clusters

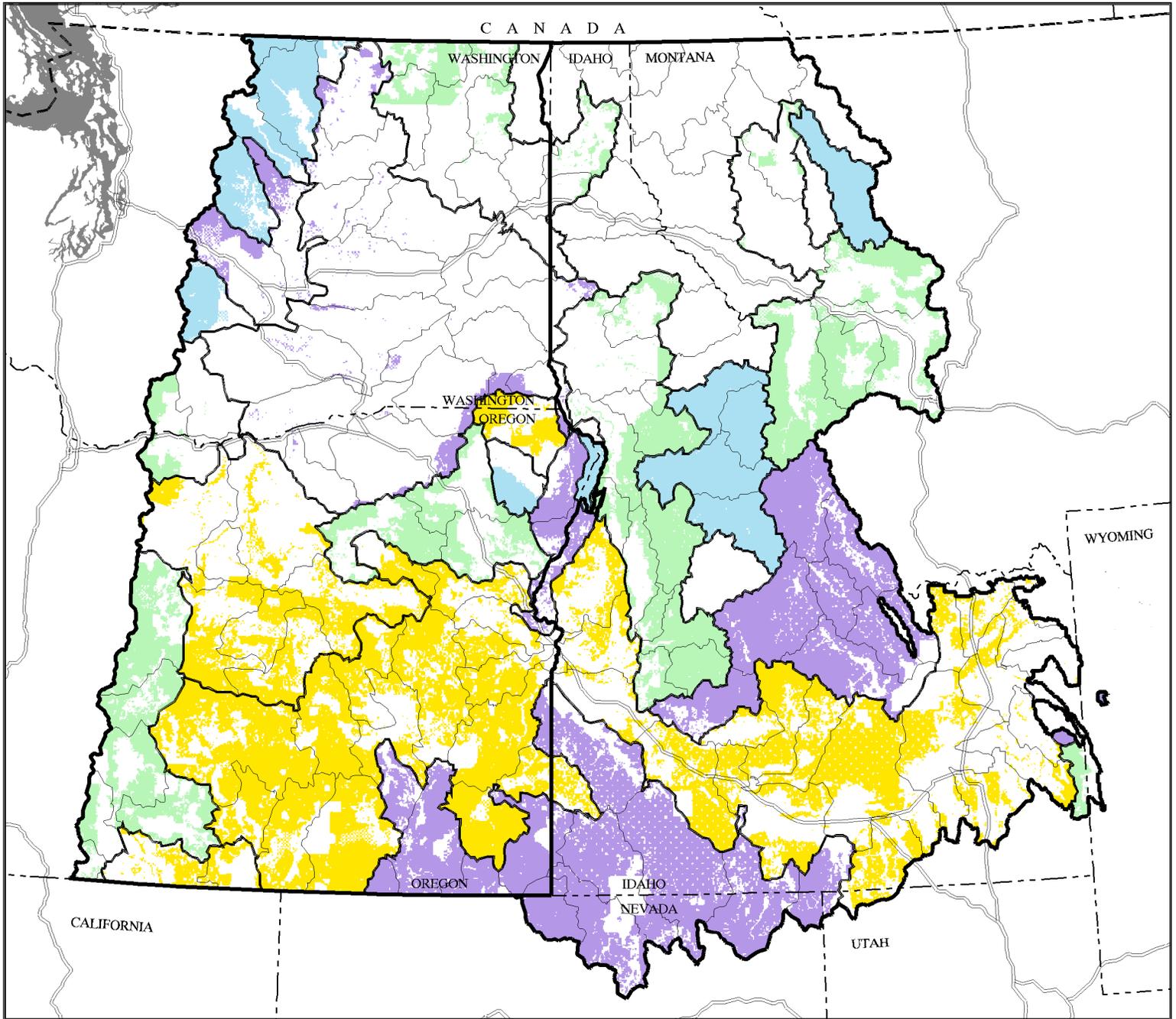
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INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |

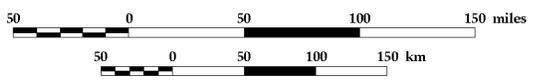


Map 3-13.
Alternative 5
Management Emphasis
for Range Clusters

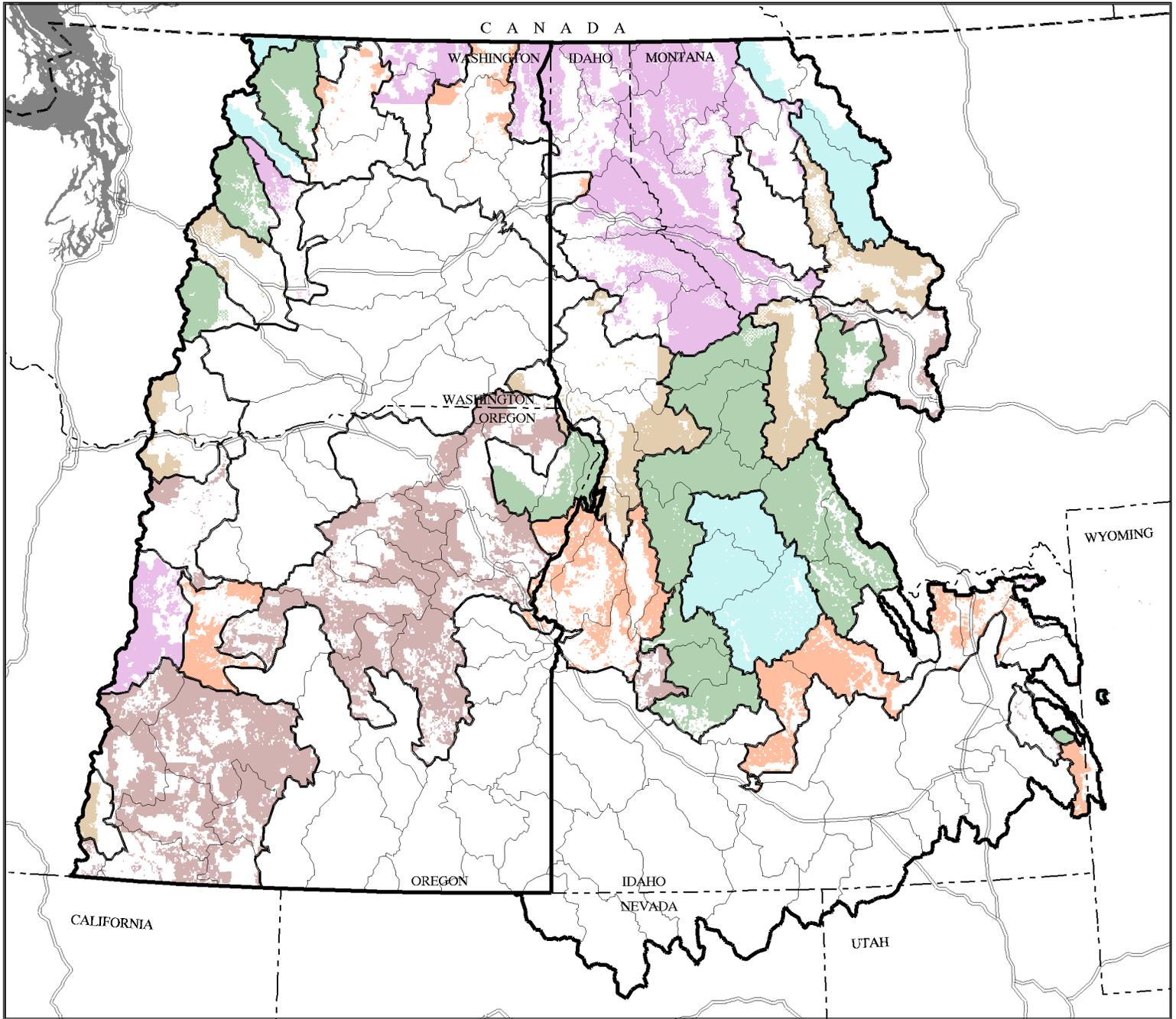
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 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |



Map 3-14.
Alternative 5
Primary and Secondary Priorities
by Forest Cluster

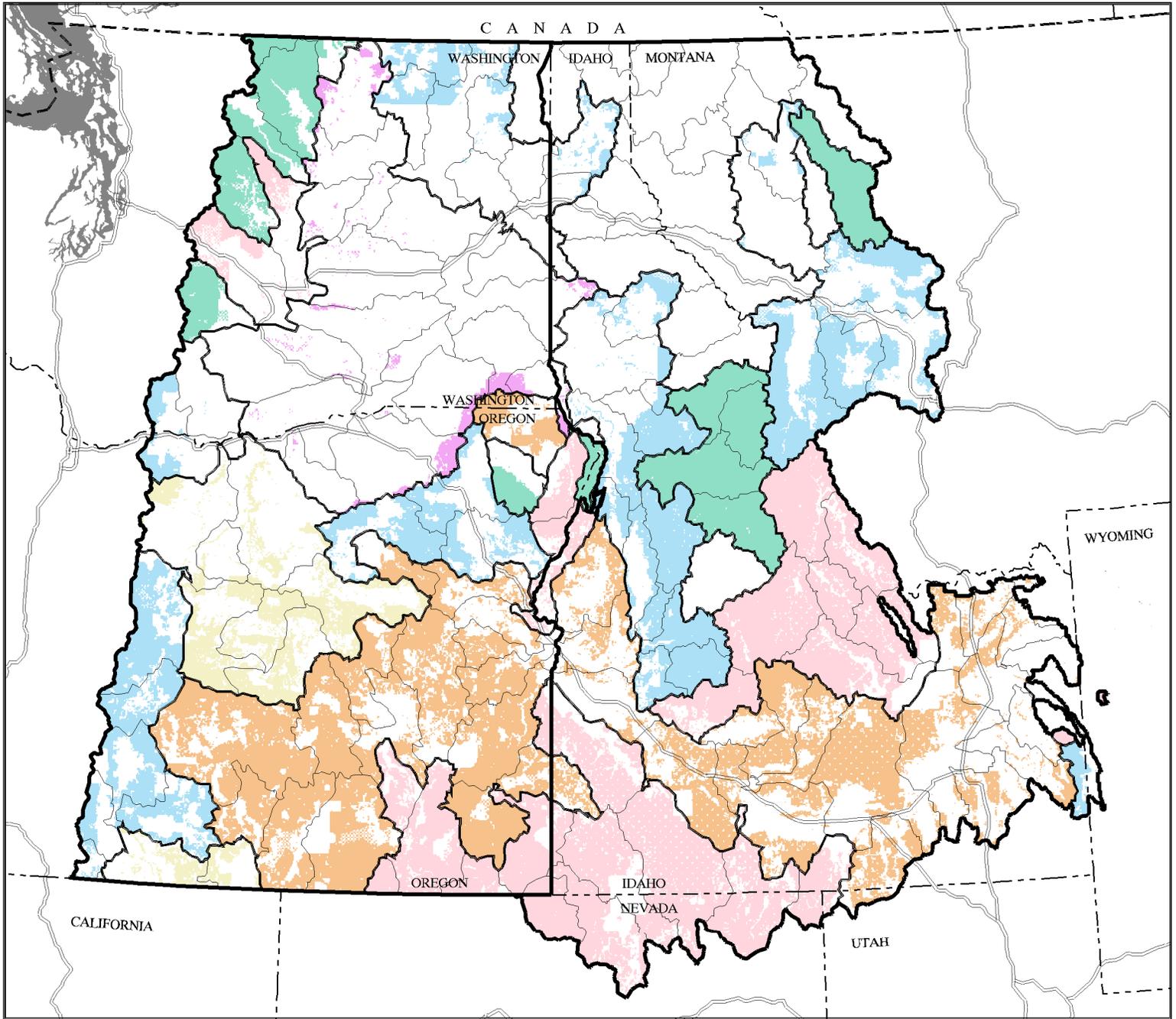
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INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|---|--|
|  Primitive Recreation/Aquatics |  4th HUC Boundaries |
|  Aquatics/Recreation |  Major Roads |
|  Aquatics/Timber |  EIS Area Border |
|  Timber/Wildlife |  Cluster Boundary |
|  Timber/Livestock | |
|  Wildlife/Recreation | |

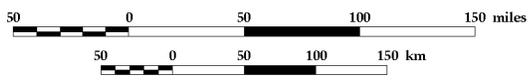


Map 3-15.
Alternative 5
Primary and Secondary Priorities
by Range Cluster

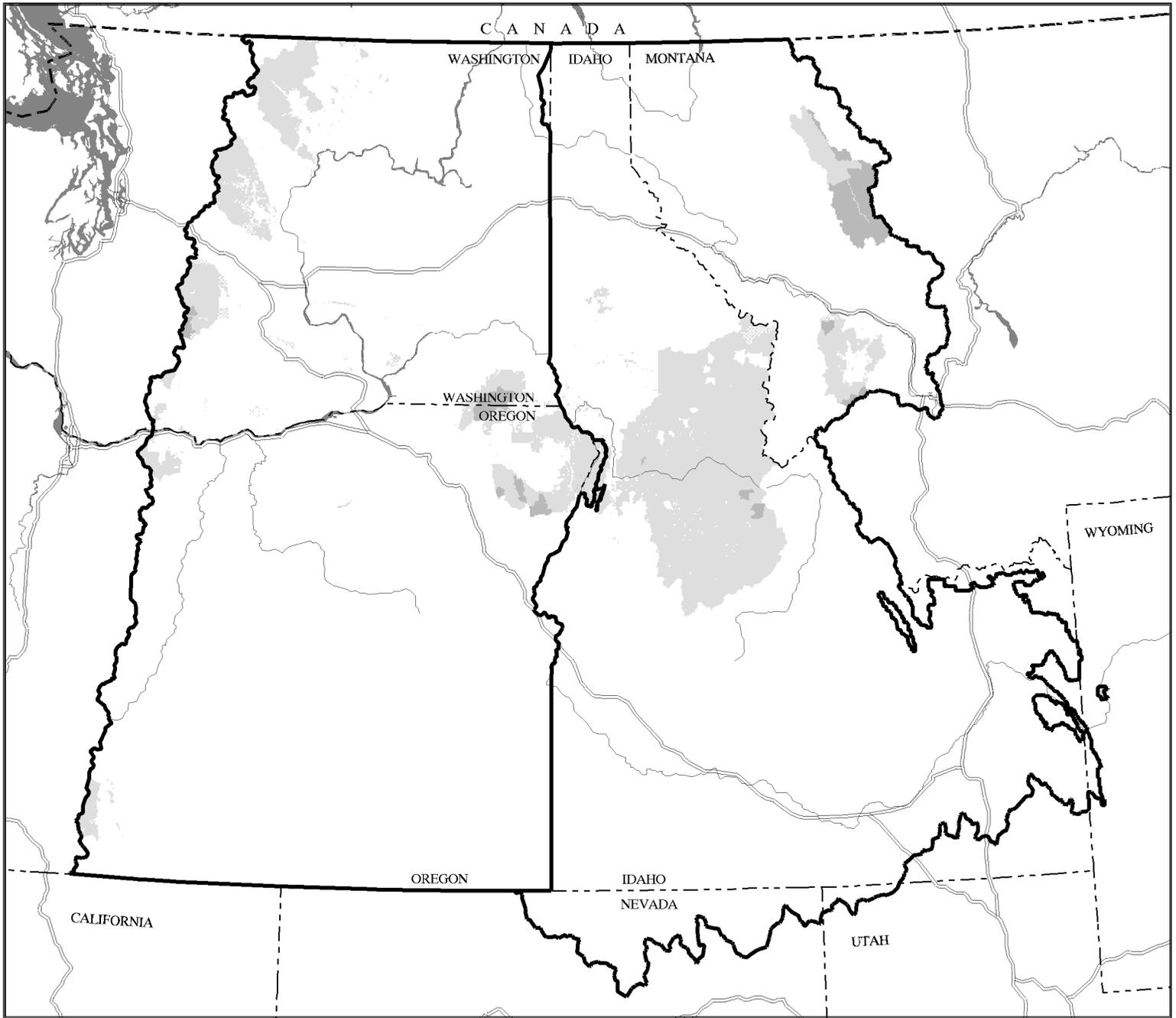
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 MANAGEMENT PROJECT

Project Area
 1996



- Livestock/Timber
- Recreation/Aquatics
- Recreation/Wildlife
- Wildlife
- Livestock/Recreation
- Livestock/Wildlife
- 4th HUC Boundaries
- Major Roads
- EIS Area Border
- Cluster Boundary



Map 3-16.
Alternative 5
Potential Areas for Ecosystem Analysis
at the Watershed Scale

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | | | |
|---|--|---|-----------------|
|  | Analysis Areas |  | Major Rivers |
|  | Analysis required for
human-ignited prescribed fire |  | Major Roads |
| | |  | EIS Area Border |

Ecosystem Analysis at the Watershed Scale is required in areas outside of timber and livestock priority areas before management activities in Category 1 sub-basins or prior to management activities that would affect federally listed and proposed species (not mapped) or recently occupied or currently accessible habitat of federally listed and proposed fish species.

Terrestrial Ecosystems ~ Rangelands

Within Livestock Priority Areas. Rangelands reflect a mosaic of multiple-aged shrubs, forbs, and native and exotic perennial grasses. There is a management emphasis on maintaining a grass-dominated plant community in the shrubland types for livestock production. Forbs and shrubs are a minor, but significant, part of the plant community. Most seedings have been diversified by the addition of various forb and shrub forage species. New infestations of noxious weeds are not common across the landscape, and existing large infestations are slowly declining.

Western-juniper-dominated sites are rare across the rangelands. The exception is rock outcrops, ridges, mesas, or other sites not prone to fire which typically have shallow soil areas with little accumulation of fine fuels. Conifers are not dominating rangeland areas such as dry grasslands.

Prescribed burning and prescribed natural fire have maintained the more grass-dominated communities although the burning is not continuous and is prescribed as mosaic. Altered sagebrush steppe has been converted to diverse perennial plant communities that provide forage production. Greenstripping and other fire breaks are apparent along roads and along the altered sagebrush steppe boundaries.

Outside Livestock Priority Areas. Same as Alternative 4 for the general description. The specific description by Potential Vegetation Groups is described below.

Potential Vegetation Groups Within and Outside Livestock Priority Areas

Dry Grass Potential Vegetation Group. Seventy to 90 percent of the area within livestock priority areas, and up to 80 percent of the area outside livestock priority areas, are dominated by native grasses and forbs without conifer and shrub encroachment.

Dry Shrub Potential Vegetation Group. Thirty to 50 percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Twenty-five to 45 percent of the area within livestock priority areas is herbaceous-dominated. The remaining areas are dominated by desirable exotic and native plant seedings, annual grasses, or noxious

weeds, and a small amount of closed shrub communities with declining herbaceous layers.

Cool Shrub Potential Vegetation Group.

Forty to 60 percent of the area in this group is dominated by native grasses and forbs with an overstory layer of shrubs. Forty to 60 percent of the area within the livestock priority areas, and 10–25 percent of the area outside priority areas, contains mixtures of perennial grasses and forbs. Conifers are dominant on less than 5 percent of the area within the livestock priority area, and on less than 30 percent of the land outside livestock priority areas.

Rangeland Wildlife Habitat

Within rangelands, wildlife priority areas have the necessary structure and composition, ecological processes, and ecosystem function to meet the needs of Federal and State listed and sensitive rangeland-dependent wildlife species. The distribution of different amounts and ages of shrubs, grassland, and woodland is approaching desired levels in a mosaic pattern. Rehabilitation or restoration of native bunchgrass is accomplished where site potential permits. Management activities to control exotics are frequent and concentrated. Blocks of habitats are more connected with areas of similar vegetation. Human activities are at a level that allows most species to maintain a desired distribution. Roads are few.

Other priority areas in rangelands have the necessary structure and composition, ecological processes, and ecosystem functions to meet needs of all Federal and State listed and special status species dependent on rangeland habitat. Vegetation is appropriate for the site, with multiple age classes of shrubs and grasses being common. Rehabilitation or restoration of native shrub and grass communities has been accomplished. Management activities to control exotic plants are frequent. These habitats are becoming less fragmented and more connected due to increasing abundance of native vegetation. Areas are fairly well connected with other areas of similar vegetation to maintain species distribution and densities. Human activities are at a level that allows sufficient useable habitat for most species to be represented and maintain expected distribution, but some species densities may be low. In many areas roads are closed (seasonal or permanent) or relocated to increase habitat quality by reducing human disturbance; road densities are variable.

Aquatic Ecosystems

Watershed Processes

The desired range of future conditions for riparian areas, streams, lakes, soil, and road corridors in aquatic priority areas, is similar to the desired range of future conditions of Alternatives 4 and 6.

There is no downward trend in riparian condition and function in timber priority areas. Small to large sized trees provide watershed protection. Most riparian areas are covered with vegetation. Most areas are connected to their streams and upslopes but a few (the more sensitive and less responsive areas) are fragmented and isolated. Most streams are moderate in productivity and have habitat that is diverse and complex. Structure is provided by small diameter wood in the smaller streams. Large and deep pools in the larger lower gradient streams are apparent.

Most portions of the landscape in timber priority areas have protective soil cover, organic matter, and coarse woody material; most biomass is stored in small to large diameter trees and as litter. Vegetation growth and hydrologic function are not impaired. There is some evidence of openings from old and new road corridors across the landscape. Moderate amounts of the landscape are open or partially open and next to the road corridors. Riparian vegetation does not appear separate and disconnected from upslope vegetation.

There is no downward trend in riparian condition and function in livestock priority areas. Most riparian areas are covered by vegetation. Most areas are connected to stream channel, floodplains, and subsurface flow networks. Woodlands are apparent. Most streams are moderate in productivity, and have habitat that is mostly complex and diverse. Structure is provided by vegetation and shrubs. Large deep pools in the larger lower gradient streams are apparent. Many streams are becoming narrow and deep.

Large portions of the landscape in livestock priority areas have protective soil cover and organic matter, mostly in the form of above-ground biomass and deep rooted plants. Soil and hydrologic function is not impaired.

Riparian areas in recreation priority areas are somewhat fragmented in areas of very

concentrated and developed recreation. Small openings are infrequent. In dispersed use and undeveloped areas, riparian areas are resilient and functioning within conditions characteristic for that valley bottom setting and vegetation type. Streams are generally productive and somewhat diverse. Areas of concentrated or developed use have reinforced stream banks interspersed with vegetated and resilient stream banks. Structure is apparent; substrate tends to be of various sizes in both areas of concentrated and dispersed use. Habitat is fairly diverse and complex in concentrated use areas, and increasingly complex in areas of less use. Large deep pools are frequent.

New roads in some riparian areas within recreation priority areas are evident and stable, but overall roads in riparian areas are few. Old and new road corridors blend into the landscape as much as possible.

Aquatic Species Habitat

Restoration strategies have been implemented on nearly all high risk sites within aquatic and recreation priority areas, allowing recovery of watershed, riparian, water quality, and aquatic conditions characteristic for that geoclimatic setting. Improved aquatic habitat conditions allow threatened and endangered aquatic species populations to stabilize and expand into previously occupied habitat. Native aquatic species population strongholds are increasing basin-wide. Major river corridor conditions have improved to allow most species to achieve their complete life cycles.

The following desired range of future conditions applies to Forest Service- or BLM-administered lands:

- ◆ Water quality to a degree that provides for stable and productive riparian and aquatic ecosystems;
- ◆ Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed;
- ◆ Instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;

- ◆ Natural timing and variability of the water table elevation in meadows and wetlands;
- ◆ Diversity and productivity of native and desired non-native plant communities in riparian zones;
- ◆ Riparian vegetation to: (a) provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems; and (b) provide adequate summer and winter thermal regulation within the riparian and aquatic zones; (c) help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed;
- ◆ Riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geoclimatic region; and
- ◆ Habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

Human Uses and Values

- ◆ Social and economic systems have adjusted to changes in the location, amounts, and product mix of commodity and non-commodity outputs.
- ◆ Where land capability is more suited to support ecological values (such as endangered species), land allocations emphasize the economic and social values of protected biological resources, and economic and social systems have adjusted accordingly.

Alternative 6

Theme

This alternative emphasizes an adaptive management approach to restore and maintain ecosystems and provide for the social and economic needs of people. While much knowledge of natural resource management has been acquired through experience and research, ecosystems are complex, and knowledge of the functions and processes that make up ecosystems is limited. Management strategies

would be adjusted based on information gained from continued research and monitoring of ecological, social, and economic conditions, and from direct input from other federal agencies, and State, county, and tribal governments.

This alternative is similar to Alternative 4 but takes a slower, more cautious approach. It implies the use of experimental processes, local research, and extensive monitoring, and is expected to take longer to reach desired conditions; there is built-in uncertainty concerning which management actions will prove to be the most effective. Restoration activities that are well studied and understood are pursued as actively under Alternative 6 as under Alternative 4.

Under this alternative, actions are implemented on a broad-scale basis when previous monitoring results or scientific research suggest that the actions are effective in achieving desired outcomes. Priorities for restoration are generally high hazard or high risk areas with high or moderate potential for success. The management direction under this alternative is similar to that of Alternative 4 except for the length of time expected, and except for the built-in uncertainty over which management actions will prove to be the most effective.

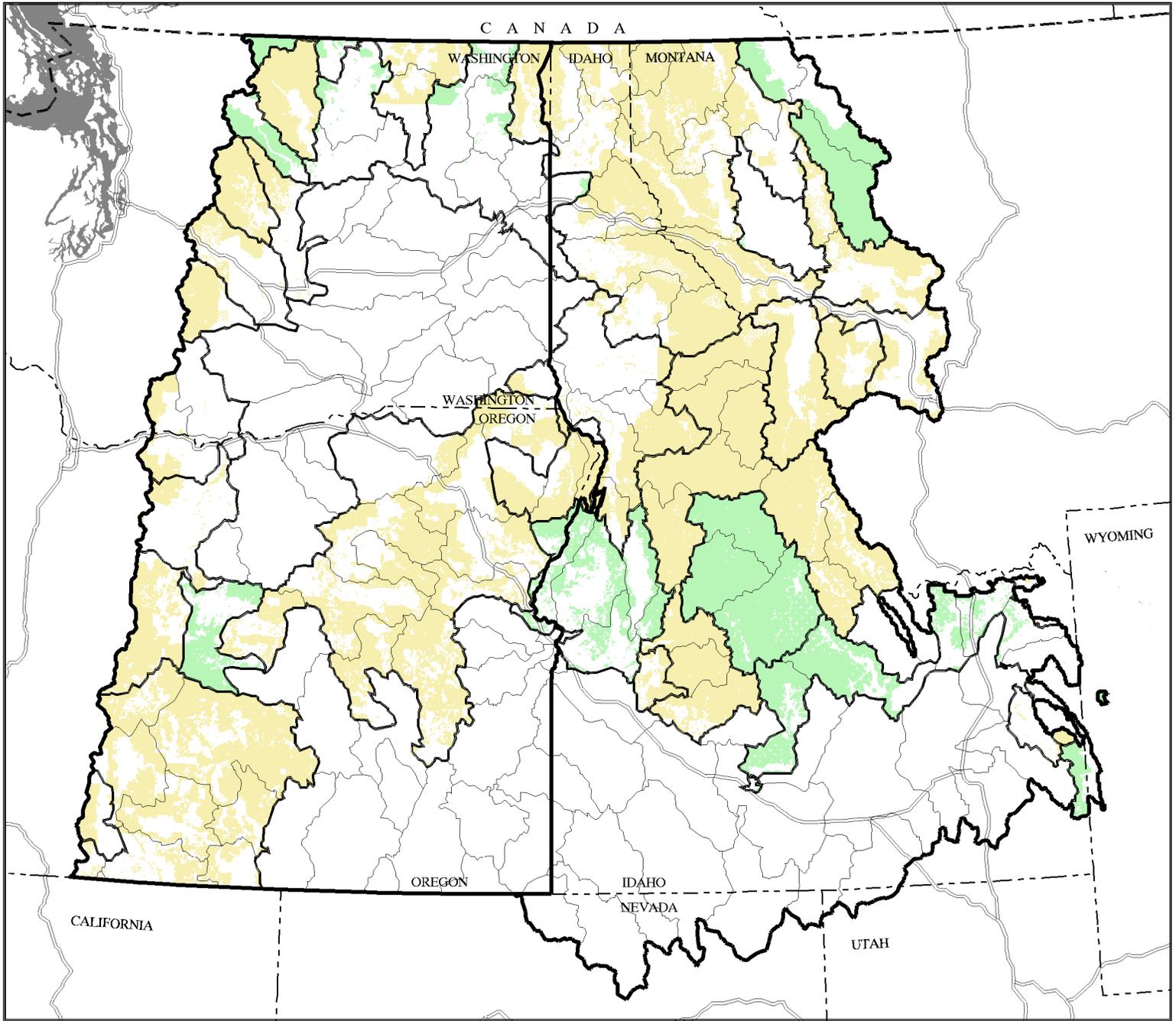
What is the Design of Alternative 6?

Alternative 6 employs more acres in the Conserve/Restore emphasis and less of a Restore emphasis than Alternative 4 for both forest and range clusters (see maps 3-17 and 3-18).

Activity tables (tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 6 were selected.

Adjustments in strategic approaches and implementation are expected as a result of intensive application of the learning process. In some cases, restoration techniques and their effects are well known and would proceed on a pace similar to Alternative 4. See following table.

Within forests, restoration is emphasized at high levels for only forest cluster 5, all potential vegetation groups, and forest cluster 4, moist forest potential vegetation group. All other forest clusters have restoration planned at moderate



Map 3-17.
Alternative 6
Management Emphasis
for Forest Clusters

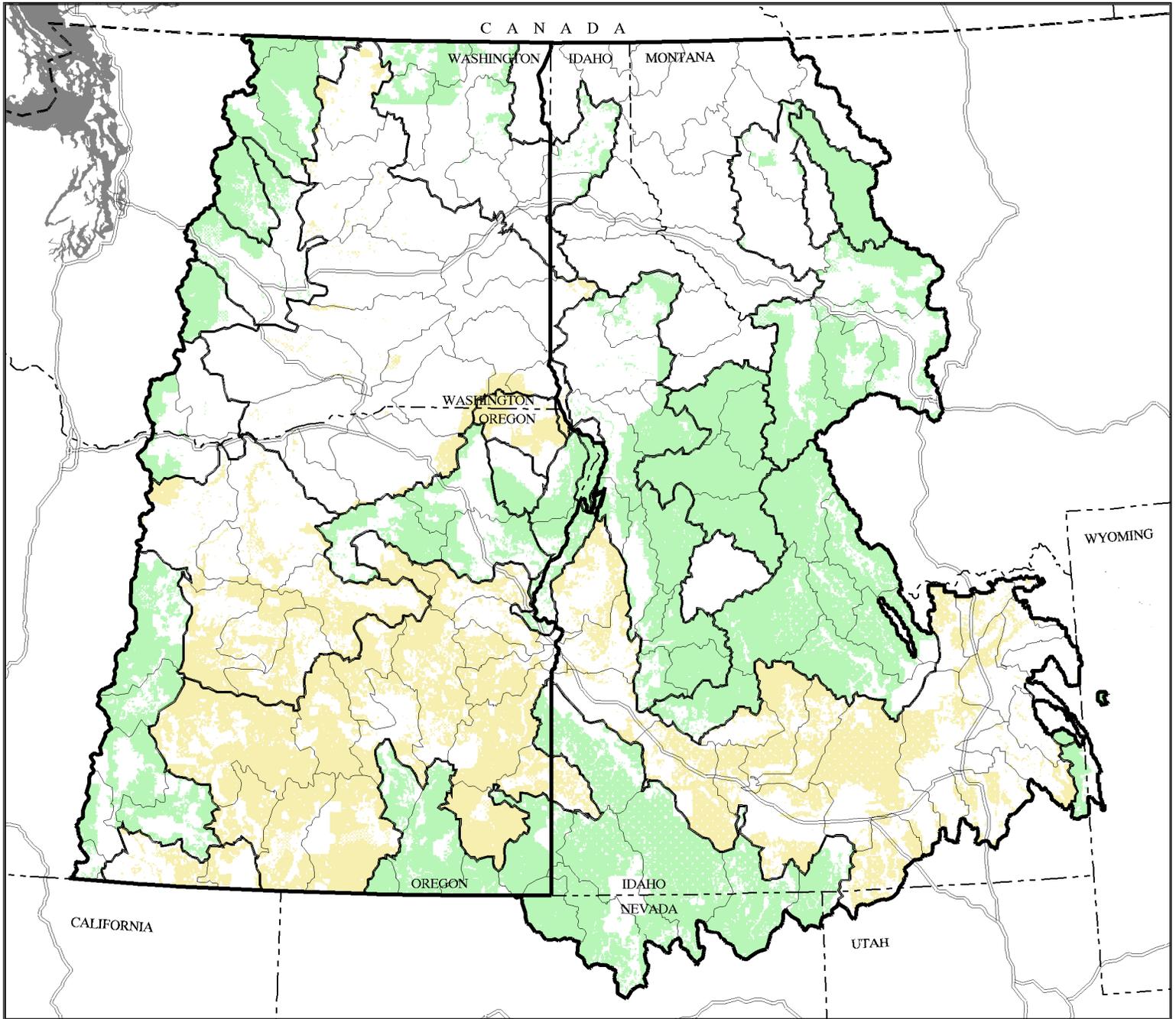
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INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |

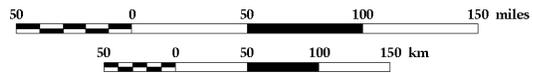


Map 3-18.
Alternative 6
Management Emphasis
for Range Clusters

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 MANAGEMENT PROJECT

Project Area
 1996



- | | | | |
|---|--------------------|---|--------------------|
|  | Conserve |  | 4th HUC Boundaries |
|  | Conserve / Restore |  | Major Roads |
|  | Restore |  | EIS Area Border |
|  | Restore / Produce |  | Cluster Boundary |
|  | Produce | | |
|  | Produce / Conserve | | |

levels for the different groups. As in other alternatives, the intent of restoration is to achieve appropriate disturbance and successional processes and move forests toward desired conditions. The use of fire is generally the preferred approach in restoration of forest vegetation. Other resource activities are at levels similar to Alternative 4.

On rangelands, overall restoration of vegetation is generally at moderate levels in range clusters 1, 2, and 3, and moderate to low in all other clusters. Strategic direction for range clusters 4 and 6 also calls for improved rangelands. The approach is to restore degraded areas associated with more productive sites and begin the process of improving composition, increasing diversity, and achieving functional range processes.

Because of the more cautious approach, production activities are at lower levels. Timber harvest is expected at moderate levels in forest cluster 4 and relatively low levels in all other clusters. Restoration activities should also contribute toward producing additional outputs. Livestock management is anticipated at relatively moderate levels in range clusters 1, 4, and 6 and low levels in other clusters. As in other alternatives, some increased level of grazing may result from restoration and improved range conditions.

The overall approach to terrestrial conservation is also the same as Alternative 4. The intent is to restore and maintain a relatively moderate to high level of habitats and habitat features within desired ranges important for animals and plants.

The aquatic strategy for Alternative 6 (see Map 3-18a) is the same as Alternative 4 except Alternative 6 places greater emphasis on subbasin review and Ecosystem Analysis. The aquatic strategy focus is to conserve Category 1 subbasins, protect or restore habitats for

federally listed, proposed, and candidate riparian-dependent or aquatic species, native trout fringe and stronghold habitats, and water quality to support beneficial uses, and protection, restoration, or maintenance of other riparian-dependent or aquatic species habitat to prevent future federal listing. This alternative has similar watershed restoration levels as Alternative 4.

Watershed restoration is directed towards improving stream, riparian, soil, and upland integrity and function.

Desired Range of Future Conditions

In addition to the desired range of future conditions elements common to all action alternatives, Alternative 6 is portrayed by a desired range of future conditions that is similar to that of Alternative 4. Acknowledging that in the short term (less than 50 years), conditions are likely to look different under Alternative 6 than they do under Alternative 4, it is anticipated that in the long term, conditions would look similar to those described under Alternative 4. Therefore, for the desired range of future conditions specific to Alternative 6, see Alternative 4.

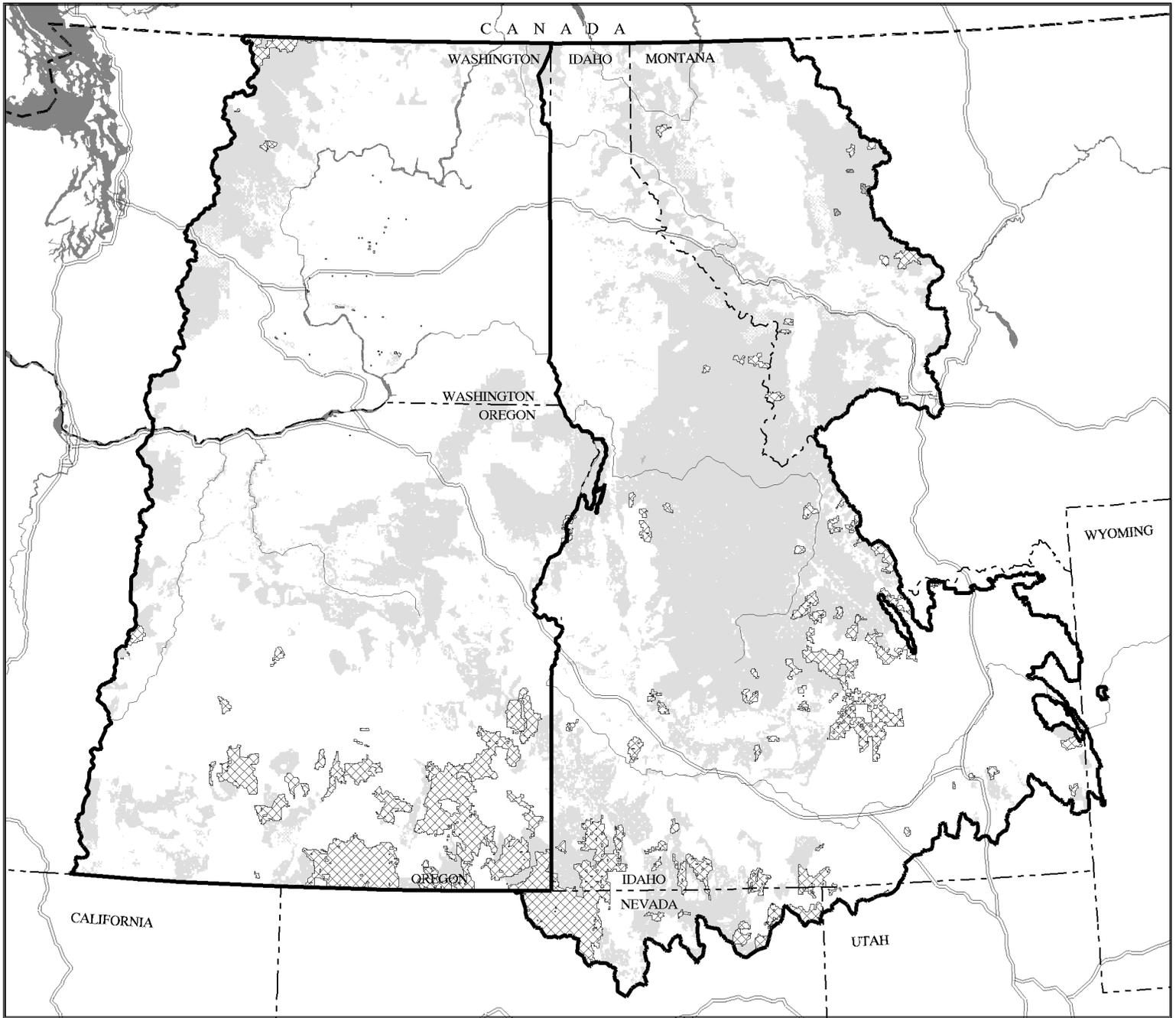
Alternative 7

Theme

This alternative emphasizes reducing short-term risk to ecological integrity and viable populations by establishing a system of reserves on lands administered by the Forest Service or BLM (see map 3-19). Reserves are delineated to include each of the representative vegetation types and

Alternative 6 - Percentage of Management Emphasis Within Forest and Range Clusters for the Project Area.

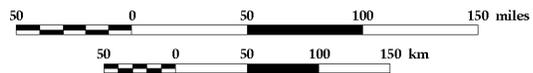
	Forest Cluster		Range Cluster	
	% of Forest Cluster	Cluster No.	% of Range Cluster	Cluster No.
Management Emphasis				
Conserve/Restore	28	1, 6	52	2, 3, 5
Restore	72	2, 3, 4, 5	48	1, 4, 6



Map 3-18a.
Alternative 6
Potential Areas for Ecosystem Analysis
at the Watershed Scale

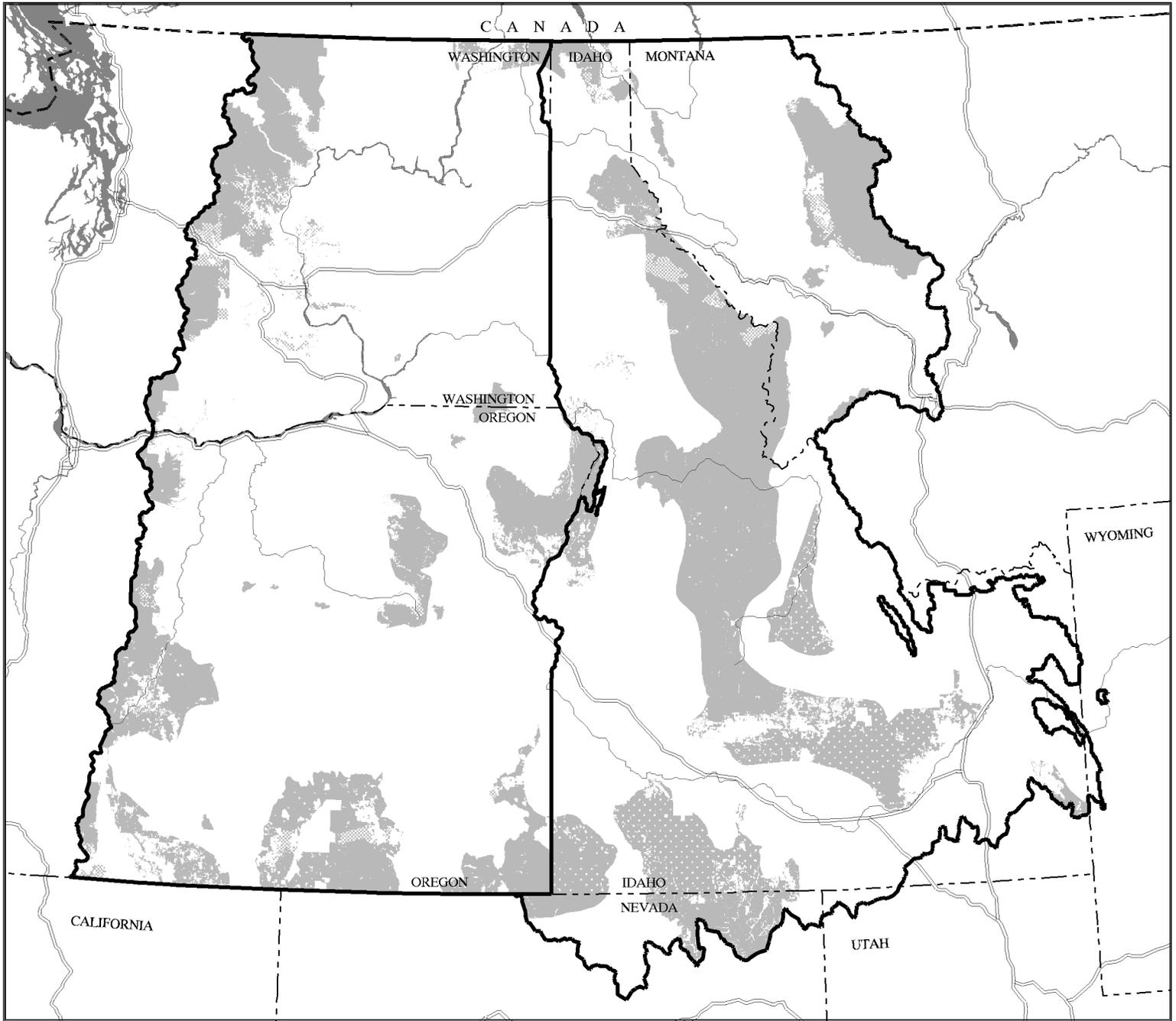
INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



-  Analysis Areas
-  Analysis required for human-ignited prescribed fire
-  Predicted road density at <math>< 0.7</math> miles/square mile
-  Major Rivers
-  Major Roads
-  EIS Area Border

Ecosystem Analysis at the Watershed Scale is required before management activities in Category 1 sub-basins or prior to management activities that would affect federally listed and proposed species (not mapped) or recently occupied or currently accessible habitat of federally listed and proposed fish species or strongholds and fringe populations of redband trout, westslope cutthroat, or Yellowstone cutthroat trout. Also Ecosystem Analysis at the Watershed Scale is required prior to road density increases in subwatersheds that have road densities <math>< 0.7</math> miles/square mile or prior to management activities that affect large blocks of native rangeland (not mapped).



Map 3-19.
Alternative 7
Preliminary Reserves



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Project Area
 1996

Reserve Area
 Major Streams
 Major Roads

are large enough to contain the most likely disturbance events. The level of human use and management is very low within the reserves. Ecological disturbance events are expected to occur naturally within the reserves. When disturbance events (such as fire or disease) occur, actions are taken to reduce the likelihood of the event extending beyond the boundary of the reserve. Most restoration activities occur on lands managed by the Forest Service or BLM outside reserves, although restoration actions are taken within reserves where there is a high risk for events occurring in the short-term that would preclude achieving desired outcomes in the long term (for example, maintaining habitats for endangered or threatened species or other scarce habitats, or controlling erosion by rehabilitating roads). Management outside the reserve boundaries would include an emphasis on conserving remaining old forest stands and unroaded areas larger than 1,000 acres. Direct involvement with the other federal agencies, and State, county, and tribal governments will be used in planning, decision-making, and implementation of programs.

Reserves are selected for representation of vegetation and rare animal species. Reserves are large; the general rule is the bigger the better. Reserves need to cover all elevation ranges; currently most large reserves are found only at high elevations. Reserves need to be large enough so natural process can occur without the influence of humans and still maintain the communities they were selected to represent. No commercial timber harvest is permitted inside reserves, but limited silvicultural activities are allowed to enhance viable populations. Grazing is strictly limited to improve the long-term conditions for which the reserve was established. Dispersed, low-impact recreation use is allowed, including hunting and fishing, as long as these activities do not affect populations of rare species or their habitat. Management of reserves is focused on long-term maintenance of natural processes and conditions with which plant and animal species have evolved.

Under this alternative, the delineation of reserves was based on information in the *Scientific Assessment* and local sources, and the following criteria:

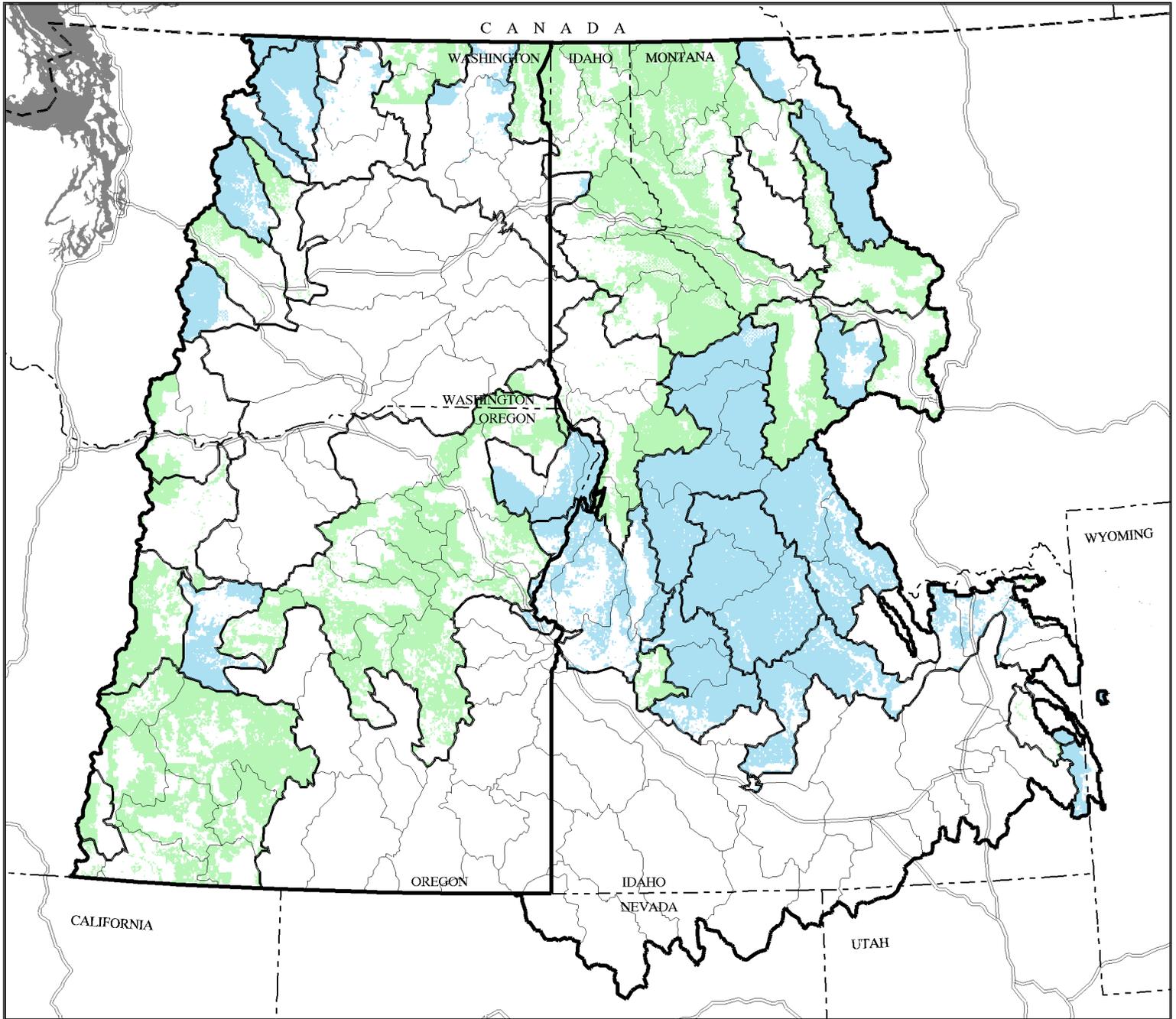
- ◆ Where they could be tied in with other habitats, current congressional reserves (such as designated Wilderness) and administrative reserves (such as Areas of Critical Environmental Concern) were used
- ◆ as a base when mapping large-scale reserves for Alternative 7. Areas that did not “fit” into the large-scale reserves would remain as currently designated.
- ◆ Habitats that support rare or narrowly distributed endemic species, as identified in the Terrestrial STAR (1996), were included.
- ◆ Large-scale reserves were overlaid on salmonid species strongholds, areas of high aquatic integrity, areas of narrowly distributed endemic fish species, and areas of important fringe populations of salmonid species.
- ◆ Where possible at least 20 percent of each major potential vegetation group was included within the large-scale reserves.
- ◆ Due to the large nature of the reserves, no attempt was made to distinguish between areas of high and low quality habitat. Approximately 42 percent of Forest Service- and BLM-administered lands became part of the reserve system.
- ◆ Large areas of core habitat for large carnivores were also included in the large-scale reserves delineation.

What is the Design of Alternative 7?

On BLM- and Forest Service-administered lands, Alternative 7 employs two basic emphases for management to enhance ecological integrity of, and viable populations on, forests and rangelands: Conserve and Conserve/Restore (see following table, and maps 3-20 and 3-21).

In general, natural processes and disturbance events will be allowed to occur essentially unimpeded by human action within the reserves. An emphasis is to restore fire as a natural disturbance process. However, limited management efforts may occur for some conditions where human action is considered necessary to achieve reserves objectives. The matrix, or surrounding area outside the reserves, would be managed with generally more active human intervention in disturbance processes.

Management actions in unroaded areas greater than 1,000 acres shall be the same as in large reserves. Unroaded areas are defined as those areas more than 50 feet slope distance from the edge of existing roadbeds and terminal points.



Map 3-20.
Alternative 7
Management Emphasis
for Forest Clusters

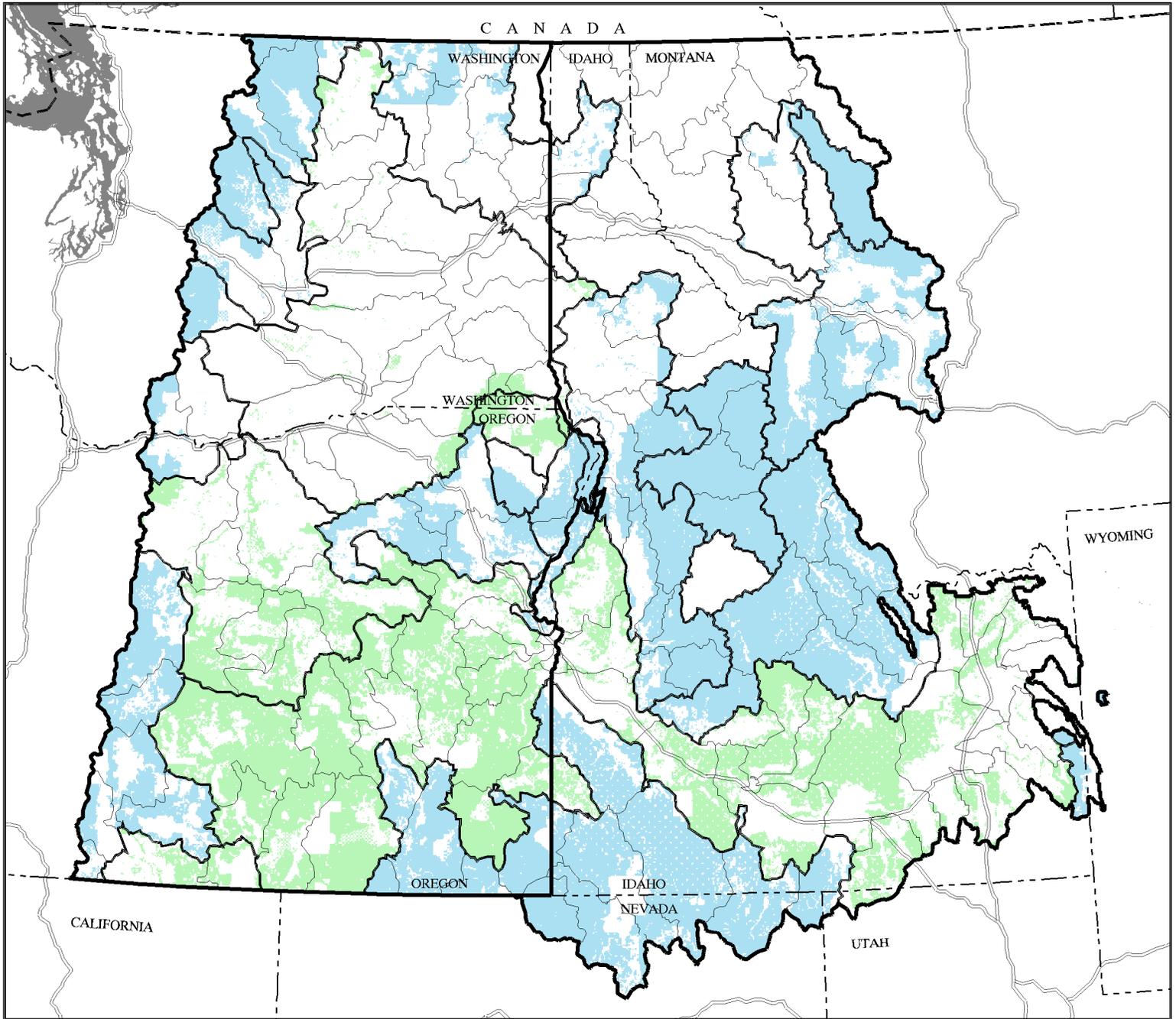
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 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |

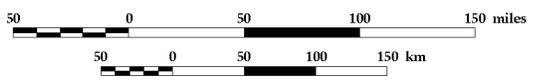


Map 3-21.
Alternative 7
Management Emphasis
for Range Clusters

*BLM and Forest Service
 Administered Lands Only*

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | |
|--|--|
|  Conserve |  4th HUC Boundaries |
|  Conserve / Restore |  Major Roads |
|  Restore |  EIS Area Border |
|  Restore / Produce |  Cluster Boundary |
|  Produce | |
|  Produce / Conserve | |

Activity tables (tables 3-6 and 3-7) are presented for each forest and range cluster by alternative to aid in analysis of effects and for projection of outcomes if Alternative 7 were selected.

The aquatic strategy in Alternative 7 is based in part on PACFISH and INFISH, and input from the Association of Forest Service Employees for Environmental Ethics (AFSEE) and the Columbia River Inter-Tribal Fish Commission (CRITFC). These reserves serve as a foundation for aquatic conservation. In addition, the alternative:

- ◆ Identifies all unroaded areas greater than 1,000 acres as strongholds for production and protection of clean water, aquatic, and riparian-dependent species.
- ◆ Establishes riparian conservation areas (RCAs) (similar to Alternative 3) and riparian management objectives (RMOs) based on PACFISH and various NMFS biological opinions. Ecosystem analysis is used to refine RCAs and RMOs.
- ◆ Provides standards that are more restrictive than PACFISH for RCAs and strongholds for some operational items including timber harvest, roads, livestock grazing, minerals management, and fire suppression. Ecosystem analysis is required for many operations.
- ◆ Pursues watershed restoration at relatively low levels compared to other alternatives.

Map 3-22 shows areas where ecosystem analysis is potentially required under Alternative 7.

Desired Range of Future Conditions

In addition to the desired range of future conditions elements common to all action alternatives, the following is the vision of the long-term (50-100 years) condition of the land under Alternative 7:

Terrestrial Ecosystems~Forestlands

Dry Forest Potential Vegetation Groups. In the dry forest potential vegetation groups, early successional stages and disturbance processes are maintained through endemic insect and disease disturbances, and fire.

Within reserves, there is a high occurrence and persistence of young forest dominated by ponderosa pine in the regeneration and young forest structural stages. Stands are fairly well distributed in a mosaic of age classes (Table 3-4).

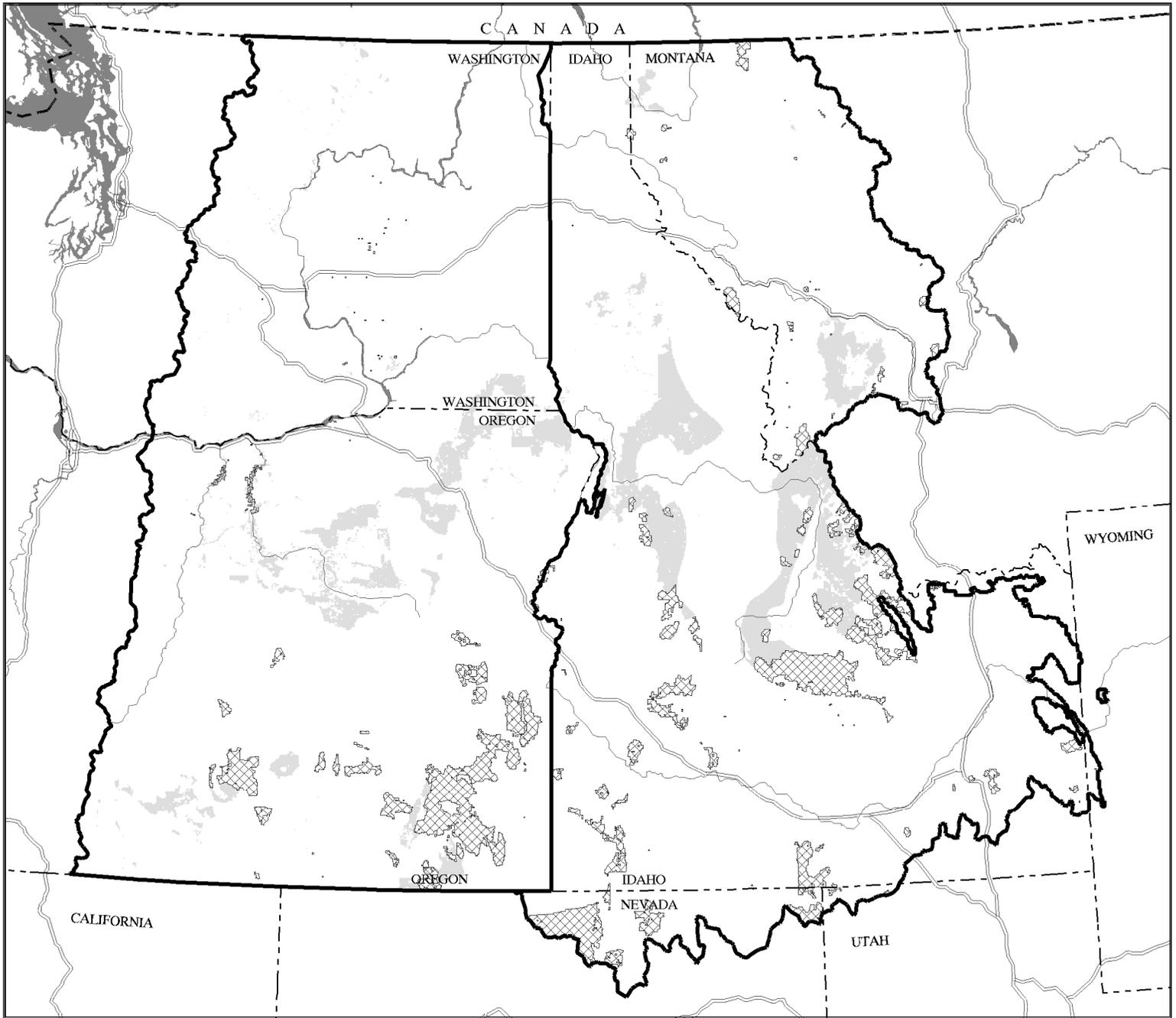
Outside reserves, there is a moderate occurrence of old single story forest dominated by ponderosa pine with a moderate component of Douglas-fir and a minor component of grand fir. Vegetation management is used in addition to natural disturbances and fire to maintain successional and disturbance processes. Stands are fairly well distributed in a mosaic of age classes (Table 3-4).

Moist Forest Potential Vegetation Groups. In the moist forest potential vegetation groups, early successional stages and disturbance processes are maintained through endemic insect and disease disturbances, windthrow often aided by root rot, and fire.

Within reserves, there is a high occurrence and persistence of regeneration, young forest, and old multi-story stages dominated by shade-intolerant species, grand fir/white fir, and Engelmann spruce/subalpine fir (Table 3-4). Outside the reserves there is a moderate occurrence and persistence of young forest consisting of western white pine, western larch, and ponderosa pine with a minor component of grand fir. Vegetation management is used in addition to natural disturbances and fire to maintain successional and disturbance processes. Stands are distributed in a mosaic of age classes (Table 3-4).

Alternative 7 - Management Emphasis Within Forest and Range Clusters in the Project Area

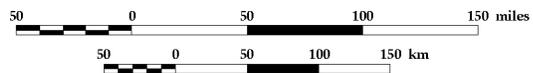
Management Emphasis	Forest Cluster	Range Cluster		Cluster No.
	% of Forest Cluster	Cluster No.	% of Range Cluster	
Conserve	43	1, 2, 6	52	2, 3, 5
Conserve/Restore	57	3, 4, 5	48	1, 4, 6



Map 3-22.
Alternative 7
Potential Areas for Ecosystem Analysis
at the Watershed Scale

INTERIOR COLUMBIA
 BASIN ECOSYSTEM
 MANAGEMENT PROJECT

Project Area
 1996



- | | | | |
|---|--|---|-----------------|
|  | Analysis Areas |  | Major Rivers |
|  | Analysis required for
human-ignited prescribed fire |  | Major Roads |
|  | Predicted road density
at < 0.7 miles/square mile |  | EIS Area Border |

Ecosystem Analysis at the Watershed Scale is required before management activities in Category 1 sub-basins or prior to management activities that would affect federally listed and proposed species (not mapped) or recently occupied or currently accessible habitat of federally listed and proposed fish species. Also, Ecosystem Analysis at the Watershed Scale is required prior to road density increases in subwatersheds that have road densities < 0.7 miles/square mile.

In dry and moist forest potential vegetation groups not in the rural/wildland interface zone, where emphasis is to manage for timber production, two to three fire intervals (underburning (non lethal) and mixed behavior fire regimes) are skipped in some areas to accumulate small diameter trees in the understory and moderate closure of larger diameter overstory trees. In crown fire regimes, one to two fire intervals are skipped in some areas to accumulate moderate diameter trees in the overstory with scattered large residual trees.

Cold Forest Potential Vegetation Groups. In the cold forest potential vegetation groups, early successional stages and disturbance processes are maintained through fire and endemic insect and disease disturbances.

Within reserves, there is a high occurrence and persistence of regeneration, young forest, and old multi-story stages of Douglas-fir, lodgepole pine, and Engelmann spruce/subalpine fir. Stands are distributed in mosaics of age classes (table 3-4). Outside reserves, the young forest stage is dominated by early successional whitebark pine with a moderate component of Engelmann spruce/subalpine fir in a mosaic of age classes. Stands are distributed in large-patch mosaics of age classes (table 3-4).

The forested potential vegetation groups have an overall range of structural stages at the landscape level as shown in table 3-4.

Forest Wildlife Habitat

Within reserves, habitat is maintained to contribute to biodiversity, viable populations, and delisting of threatened or endangered species. All major vegetation types are included in large reserves, providing an adequate representation of wildlife habitats. Habitats ensure long-term evolutionary potential of native species. Old forest structure is dominated by large trees, both dead and alive, typical of that which developed with a natural disturbance regime. Old forest habitats provide for needs of old forest associated wildlife species.

Forested areas within reserves contain necessary structure, composition, and attributes of old forests. Reserves have often absorbed large disturbance events and impacts from activities adjacent to reserves and still provide sufficient habitat for viable populations. Reserves of all vegetation types are present in more than one location so that large-scale disturbances are less

Table 3-4. Desired Seral Stages at the Landscape Level for Alternative 7

PVG	Early	Mid	Mature ¹ and Old ² Multi	Mature & Old Single	Other ³
Distribution (percentage of PVG)					
Dry (W)	20-35	35-45	5-15	5-20	0-15
Dry (O)	15-25	30-45	10-20	10-30	
Moist (W)	25-40	45-60	5-15	2-7	
Moist (O)	20-30	45-60	10-20	5-10	
Cold (W)	30-40	40-50	5-15	5-10	1-2
Cold (O)	25-35	40-50	10-20	5-15	
Shade-Intolerant Species (percentage of seral stages)					
Dry (W)	70-80	65-75	55-75	65-85	
Dry (O)	70-80	60-70	55-70	75-90	
Moist (W)	65-80	60-70	50-70	65-80	
Moist (O)	65-75	55-65	50-60	55-70	
Cold (W)	60-75	60-70	50-60	85-95	
Cold (O)	55-65	50-60	50-60	85-95	

¹ Mature refers to ages and sizes of dominant trees that are at least at culmination of mean annual increment of tree stand volume growth.

² Old refers to ages and sizes of dominant trees that are significantly beyond what may be found at culmination of mean annual increment of tree stand volume growth.

³ Refers to understory of grasses, shrubs, and forbs.

(W) = within reserves; DRFCs actually represent expected ranges of future conditions over the very long-term. Ranges of future conditions over the next 50-100 years are relatively unpredictable

(O) = outside of reserves.

likely to disrupt the intent of the reserve in the short term. Human activities are at levels that allows all species to maintain their distribution. Densities of species may be low, but all expected species are present. Habitats of endemics, disjunct species, and centers of biodiversity of rare plant and animal species are being managed to meet these species needs. Road use restrictions are common to maintain population densities and prevent disturbances that will cause animals to be displaced.

Outside of reserves the desired range of future conditions for forested wildlife habitat is similar to that of Alternative 3.

Terrestrial Ecosystems~Rangelands

Within Reserves. Where noxious weeds or other exotic plants have not dominated the vegetation

types, rangelands (especially the cool shrub areas) reflect a diverse mosaic of multiple-aged shrubs, forbs, and native grasses. Some seedings include native species, especially in the moist areas, and have become more diverse especially in the shrub component. Noxious weeds are increasing on the rangelands as a result of minimal control and due to the increasing competitiveness of noxious weeds with native plant species. The dry shrublands are especially affected by noxious weeds, with a majority already infested.

Western juniper encroachment onto dry grassland, dry and cool shrubland, and riparian areas, is retarded by natural fire where the understory vegetation provides adequate fine fuel to permit fire. Some juniper stands are being reduced in spatial extent by limited juniper cutting, especially those stands that (1) are of sufficient density that site biodiversity is being compromised, and (2) are not likely to be affected by wildfire. Western juniper presence is confined primarily, but not exclusively, to sites such as rock outcrops, ridges, mesas, and other sites that are not fire prone, which typically are characterized by low fine fuel accumulation and shallow soils. Conifers are being reduced by natural fire regimes on rangeland areas such as dry grassland.

Altered sagebrush steppe has occupied a majority of the dry shrub communities, especially the Wyoming sagebrush warm sites. Some altered sagebrush steppe areas, especially those in the more moist areas, are slowly moving toward a native plant community as native plants re-invade these areas. The slow conversion of altered sagebrush steppe sites to medusahead and yellow starthistle is apparent in some areas. Greenstripping and other fire breaks have been naturally colonized by some native species, although the seeded species is still dominant.

Outside Reserves. Same as Alternative 3, for the general description. The specific description by potential vegetation groups is described below.

Potential Vegetation Groups Within and Outside Reserves

Dry Grass Potential Vegetation Groups.

Seventy to 90 percent of the area within reserves areas, and 50 to 70 percent of the area outside reserves, are dominated by native grasses and forbs without conifer and shrub encroachment.

Dry Shrub Potential Vegetation Groups.

Twenty to 40 percent of the area in this group within reserves is dominated by native grasses and forbs with an overstory layer of shrubs. Five to 15 percent of the area within reserves is herbaceous-dominated. The remaining area within reserves is dominated by cheatgrass and noxious weeds, dense sagebrush canopy areas, and seedings. Forty to 60 percent of the area outside of reserves in the dry shrub potential vegetation group is dominated by shrub stages with a healthy understory layer in which native grasses and forbs are well represented. Five to 20 percent of the area is dominated by native grass and forb communities outside of reserves. The remaining area outside reserves is dominated by closed shrub communities with declining herbaceous layers, by annual grasses or by seedings of exotic grasses, and by other plants.

Cool Shrub Potential Vegetation Groups.

Fifty to 70 percent of the area in this group is dominated by shrub stages with a healthy understory layer in which native grasses and forbs are well represented. Twenty to 40 percent of the area within reserves, and 10 to 30 percent of the area outside reserves, contains mixtures of perennial grasses and forbs. Conifers are dominant on 5 to 10 percent of the area within reserves, and less than 30 percent of the land outside reserves.

Rangeland Wildlife Habitat

All major rangeland cover types are included in the reserve system, providing representation of habitat and areas large enough to support all native species. Reserves represent the same habitats in several locations, to ensure that if a large disturbance event occurs in one reserve, the effects are short term relative to the communities represented in all reserves. Human activities are at levels that allow species to maintain expected distribution and abundance for the habitats represented. Few roads are located within reserves. Because of these conditions, biodiversity, viable populations, and continued recovery of federally listed threatened and endangered species is occurring within reserves.

Rangeland habitat attributes outside of reserves are meeting the needs of endemic species, but not to the same extent as within reserves. Vegetation conditions are not barriers to movement of species between reserves. Conditions outside of reserves do not cause

reserves to become islands of habitat. Human activities are at levels that allow all species to maintain distribution and abundance, but densities may be reduced. Use of roads is regulated as needed to maintain habitat effectiveness for species persistence.

Aquatic Ecosystems

Within Reserves. Riparian areas within reserves are resilient, diverse, and functioning within their site potential. Many less resilient, more sensitive areas are recovering. Tall trees, moderate or large in diameter, are fairly frequent within riparian areas. Riparian areas are covered by protective vegetation and generally connected with their streams and upslopes. In rangeland reserves, riparian area soils are dominated by native, deep-rooted plants, and shrubs are especially common along streambanks. Wetlands are prevalent across the lower gradient valley bottoms.

Streams within reserves are generally productive, having a diversity and complexity of habitat. Stream cover and structure from inputs of large wood and bank vegetation are abundant. Substrates consist of a variety of particle sizes, which accommodate the spawning and rearing needs of aquatic species. Large, deep, and complex pools are common.

Most soils within reserves have protective cover, adequate levels of soil organic matter, and coarse woody material that is well distributed in varying sizes and plant parts. Soils also have adequate physical properties for vegetation growth and hydrologic function. Physical, chemical, and biological processes of all soils function similarly to comparable soils which have not been harmfully disturbed.

There is little evidence of openings from old road corridors across the landscape within reserves, in riparian areas, or elsewhere, and no evidence of new openings from road corridors.

Aquatic Species Habitat

Restoration strategies have been implemented on nearly all high-risk sites within reserve areas. This allows recovery of watershed, riparian, water quality, and aquatic conditions characteristic for that geoclimatic setting. Improved aquatic habitat conditions allow threatened or endangered aquatic species

populations to stabilize and expand into previously occupied habitat. Native aquatic species population strongholds have increased. Major river corridor conditions allow near full expression of aquatic life histories.

Outside Reserves. Riparian areas outside of reserves are mostly resilient and becoming diverse. Tall trees are apparent in riparian areas. Most non-reserve riparian areas are connected to their upslopes and streams. In rangelands outside of reserves, most riparian area soils are covered by native vegetation. Wetlands are visible and frequent in the lower gradient valley bottoms.

Streams are moderately productive and complex. Large, deep, and complex pools are present in many streams.

Most soils have protective cover, adequate levels of soil organic matter, and coarse woody material.

The following desired range of future conditions also applies in Alternative 7:

- ◆ The distribution, diversity, and complexity of watershed and landscape-scale features are maintained and restored to ensure protection of the aquatic systems to which species populations and communities are uniquely adapted.
- ◆ Spatial and temporal connectivity within and between watersheds are maintained and restored. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact strongholds. These connections will provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

Human Uses and Values

Social and economic systems have adjusted to changes in the location, amounts, and product mix of commodity and non-commodity outputs from Federal lands in different parts of the project area.

Human use and activities are very low within reserves but increase with distance away from reserve boundaries. Restoration actions within reserves are completed within 10 to 20 years.

In areas most affected by reserves, economic and social adjustments have completed a shift away from commodity outputs and toward deriving the economic and social benefits of protected biological resources. Outside reserves, economic and social systems have adjusted to decreased outputs of commodities.

Objectives and Standards

The objectives, standards, and guidelines that follow for Alternatives 1 and 2 (the no action alternatives) are representative of the types of direction currently in effect in the 47 BLM and Forest Service land-use plans in the Upper Columbia River Basin EIS area. Because these plans were written at different times, by different teams from different agencies, few if any of the objectives, standards, or guidelines listed here are written exactly like those in the plans.

Objectives and standards for Alternatives 3 through 7 are found in table 3-5, which follows the descriptions of Alternatives 1 and 2. Guidelines for Alternatives 3 through 7 that describe how the objectives and/or standards could be implemented are listed in Appendix H. They were put in the appendix to emphasize that they are optional, not required, actions that could be used under each alternative. Guidelines for Alternatives 1 and 2 are included with the objectives and standards in this chapter because they are representative, not necessarily actual, guidelines.

Definitions

Objectives ~ Indicators used to measure progress toward attainment of goals. They address short- and long-term actions taken to meet goals and the desired ranges of future conditions. Unless otherwise stated, all objectives listed here are assumed to be implemented within 10 years.

Standards ~ Required management actions addressing how to achieve objectives. Standards can include requirements to refrain from taking action in certain situations.

Guidelines ~ Suggested actions, priorities, processes, or prescriptions that are useful in meeting objectives. They are not required. Guidelines are listed in Appendix H.

Some of the objectives and standards place priority or emphasis for particular activities in certain forest or range clusters. This is intended to demonstrate where, at the broad scale, general priorities and emphasis should be. It in no way precludes similar activities in other clusters. Mid-level analysis, as described in the various objectives and standards as well as in Appendix I, is a process that is intended to verify broad-scale information and emphasis, and identify additional opportunities.

One of six management emphases was given to each forest and range cluster (see last section in Chapter 2 for definition). The emphases are conserve, restore, produce, conserve-restore, conserve-produce, and restore-produce. The primary three emphases are defined below. See the User's Guide at the end of this chapter for more information.

Conserve ~ Management emphasis is on protection and maintenance of forest, rangeland, and aquatic conditions, health, and integrity. Management recognizes that natural processes dominate the landscape and gradual change will occur. Generally, the conserve emphasis is applied as the primary management emphasis to areas with moderate to high ecological integrity. Secondarily, the restore or produce emphasis is applied when associated benefits can be provided.

Restore ~ Management emphasis is designed to move ecosystems to desired conditions and processes, and/or to healthy forestlands, rangelands, and aquatic systems. A variety of management-induced activities dominate the landscape. Generally, restore emphasis is applied to areas of moderate to low ecological integrity. Secondarily, the conserve emphasis is applied to areas with high integrity, and the produce emphasis is used when associated benefits can be provided.

Produce ~ Management emphasis is directed at providing, growing, or making goods and services available for human needs and/or desires, while sustaining productivity and maintaining associated values. Under produce emphasis, consumption-based activities dominate the landscape. This management emphasis is applied to areas available and suitable for

resource production in order to provide goods and services. A restore emphasis may be used secondarily when production can be benefited.

Objectives are intended to move conditions toward the desired ranges of future conditions described for alternatives and to be implemented within 10 years. Objectives will differ among alternative and clusters according to different emphasis or combinations of emphasis as described by using the words restore, conserve, or produce. Although these alternatives by clusters may have emphasis to restore or conserve or produce something, this does not indicate that there are no other major uses of resources. For example, production of forage for livestock grazing is still a major part of all alternatives even though there may not be an emphasis to produce livestock forage in an objective. It is expected that restoration, conservation, and production activities would occur in all alternative even if they are not emphasized in an objective.

Alternative 1

Physical Environment

Soil

A1/PE-O1. 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.

A1/PE-O2. Objective: Maintain at least 80 percent of each activity area in condition of acceptable productivity potential.

A1/PE-O3. Objective: Use management practices that ensure:

- ◆ Adequate amounts of ground cover to support infiltration, maintain soil moisture storage, and stabilize soils.
- ◆ Permeability rates are appropriate to climate and soils.
- ◆ Adequate nutrient capital and functioning cycles.

A1/PE-O4. Objective: Where detrimental effects have occurred, plan and implement rehabilitation to meet soil and water objectives and standards.

A1/PE-O5. Objective: Stabilize lands disturbed as a result of activities to control soil erosion.

Air Quality

A1/PE-O6. Objective: Meet State air quality requirements.

A1/PE-S1. Standard: Prescribed burning shall be planned and conducted in accordance with State Smoke Management Plans and State Implementation Plans of the Clean Air Act.

A1/PE-G1. Guideline: Smoke management mitigation measures may be used to reduce emissions from prescribed burning.

A1/PE-S2. Standard: Reduce total emissions from prescribed burns to prevent significant deterioration.

A1/PE-G2. Guideline: Prescribed fire and other fuels management may be used to reduce the potential for wildfire emissions.

Terrestrial Ecosystems

Fire Management

A1/TE-O1. Objective: Manage wildland fire to protect human life and property and to minimize loss of resource values.

A1/TE-S1. Standard: All wildfires shall receive a prompt and appropriate suppression response as defined by the agency.

A1/TE-S2. Standard: Priorities for fire suppression shall be the protection of human life, public safety, private property, and improvements or investments.

A1/TE-G1. Guideline: Minimum impact suppression methods can be used.

A1/TE-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.

A1/TE-G3. Guideline: Consider managing residue profiles at a level to minimize the potential of high intensity catastrophic wildfire and provide for other resource objectives.

Noxious Weeds

A1/TE-O2. Objective: Integrate noxious weed management into project and activity planning to contribute to the prevention, detection, control, and eradication of noxious weeds.

A1/TE-S3. 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 (ROD)* (USDA, BLM 1991), *Northwest Area Noxious Weed Control Program (ROD)* (USDI BLM 1987), or similar agency direction.

Forested Lands

A1/TE-O3. Objective: Use timber management activities to promote horizontal and vertical vegetative diversity to help meet wildlife, aesthetic, recreational, and other objectives.

A1/TE-S4. 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.

A1/TE-S5. 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 are 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 control vegetation 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 minimize serious risk of damage caused by mammals, insects, disease, or wildfire, and that allow treatment of existing insect, disease, or fuel conditions;

- ◆ Assure that lands can be adequately restocked within time frames; and

- ◆ Be practical and economic in terms of transportation, harvesting, preparation, and administration of timber sales.

A1/TE-S6. Standard: Clearcutting should be allowed only when it is found to be the optimum harvest method.

A1/TE-G4. 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.

A1/TE-G5. Guideline: Appropriate silvicultural practices can include site preparation, tree improvement, reforestation, release and weeding, thinning, fertilizing, pruning, sanitation harvest, salvage harvest, even-aged harvest (shelterwoods, seed tree, clearcuts), and uneven-aged harvest (individual tree and group selection). Regeneration and tree stocking standards are defined at the local area.

A1/TE-S7. Standard: Lands scheduled for timber harvest using even-aged practices should be managed on rotation(s) equal to or greater than 95 percent of culmination of mean annual increment of growth (based on cubic foot measure).

A1/TE-S8. 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 classed as 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 in height and free to grow.

A1/TE-S9. Standard: Openings created by even-aged harvesting should not exceed 40 acres; exceptions are permitted under catastrophic conditions.

A1/TE-O4. Objective: Provide for salvage harvest of timber killed or damaged by events

such as wildfire, wind storms, and insects and diseases, consistent with management objectives for other resources.

Rangelands

A1/TE-O5. Objective: Make suitable rangelands available for grazing and browse use in coordination with other uses and protection of productivity.

A1/TE-S10. Standard: Allocate forage on allotment or management area to meet basic plant, plant vigor, and soil needs as first priority.

A1/TE-S11. Standard: Use the forage utilization standards defined in agency guides; use levels should be consistent with objectives established by land-use plans.

A1/TE-G6. Guideline: Set forage utilization standards (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.

A1/TE-G7. Guideline: Design grazing systems to maintain or improve plant vigor.

A1/TE-S12. 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, economic efficiency analysis and coordinating requirements).

A1/TE-G8. Guideline: Intensive range management practices, including rest, may be used to protect and improve riparian vegetation and fish and wildlife habitats.

A1/TE-G9. Guideline: To stabilize soils and to 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 release grazing pressure from native range to improve condition.

A1/TE-G10. 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.

A1/TE-G11. Guideline: Provide periods of rest from disturbance or livestock use during times of critical plant growth to maintain or improve vegetation condition.

Terrestrial Species and Habitats

A1/TE-O6. Objective: Provide habitat for viable populations of existing native and desirable non-native vertebrate wildlife species.

A1/TE-S13. 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 dependent on old forests. Meet key species requirements by managing (reserve) areas of appropriate size and arrangement with the following characteristics: adequate larger, older trees; proper stand structures and densities (usually multi-storied); snags and downed logs; associated feeding habitat; and other criteria.

A1/TE-S14. 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 appropriate levels in other areas; leave appropriate levels of green trees to serve as a source of future snags.

A1/TE-S15. Standard: Dead and downed logs should be provided in appropriate numbers by size classes to support wildlife species that use this resource.

A1/TE-S16. 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.

A1/TE-S17. Standard: Big game habitats including winter ranges, calving/fawning areas, wallows, and migration areas, should be protected at key times by maintaining desired vegetative structure and characteristics.

A1/TE-S18. 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.

A1/TE-S19. Standard: For Federal threatened, endangered, candidate, and special status species, use required biological assessment/evaluation procedures and meet consultation requirements. Promote preservation, restoration, and/or maintenance of habitats.

Wilderness and Reserves

A1/TE-O7. Objective: Manage Wilderness Areas and reserves for natural ecological processes with minimal human interference; preserve and protect natural conditions, processes, and wilderness character.

A1/TE-G12. Guideline: In Wilderness Areas and reserves, replicate natural processes, disturbance events, and cycles with prescribed fire(s). (Naturally occurring fires are considered prescribed fires until declared a wildfire [outside of prescription]. Wildfires may be suppressed using appropriate agency suppression strategies.)

A1/TE-S20. Standard: In Wilderness Areas and reserves, recreation, range, and other permitted activity use and facilities shall be managed to meet wilderness objectives and preserve wilderness character and values.

A1/TE-G13. Guideline: In Wilderness Areas and reserves, the limits of acceptable change process can be used to determine management actions to preserve natural environments and provide for wilderness experiences.

A1/TE-S21. Standard: Timber harvest and motorized vehicle access shall be prohibited in Wilderness Areas and reserves, except for emergencies or other authorized exceptions.

A1/TE-S22. Standard: Manage Wilderness Study Areas to protect and preserve their wilderness characteristics. Protect and preserve special resource values of Areas of Critical Environmental Concern.

Aquatic Ecosystems

A1/AQ-O1. Objective: Inventory, treat, and improve conditions in watersheds in need of restoration to reverse and 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.

A1/AQ-S1. 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).

A1/AQ-S2. Standard: Beneficial uses shall be protected by implementing water quality practices, plans, and policies in current memoranda of understanding with the States.

A1/AQ-S3. Standard: Proposed projects or management actions shall be evaluated for cumulative effects on water quality, quantity, and stream channels.

In this EIS, the following terminology has been used to distinguish standards from guidelines (Source: Forest Service Directive 1110.8, Degree of Compliance or Restriction in Directives):

Verb	Degree of Compliance/Restriction	Applies to
must, shall	Action is mandatory.	Standards
should	Action is required unless other actions (including non-action) fully meet the intent of the standard.	Standards
may, can, could	A suggested technique, which is optional.	Guidelines
will	Applies only to statement of future condition or an expression of time. Not to be used in place of shall or must.	Desired Range of Future Conditions

A1/AQ-G1. Guideline: Consider dispersing activities in time and space, where practicable, to the extent needed to meet management requirements.

A1/AQ-O2. Objective: Provide and maintain a diverse, well distributed pattern of fish habitat to aid in increasing anadromous fish runs, by:

- ◆ Meeting criteria in State water quality standards for stream temperature and provision of stream side vegetation;
- ◆ Maintaining sufficient large woody debris to provide for continuous long-term supply in all channels;
- ◆ Promoting bank, floodplain, and channel stability to provide resiliency to disturbance and foster aquatic diversity;
- ◆ Providing pools that are large, well distributed, and persistent during low flows, and conserving or restoring channel morphology appropriate to the climate and landform; and
- ◆ Providing for cover in grass-forb, shrub, and tree dominated sites in riparian areas.

A1/AQ-G2. Guideline: Practices that maintain or promote sufficient residual vegetation can be used to maintain, improve, or restore riparian and wetland functions. Practices that maintain or promote appropriate channel morphology and functions may be used.

A1/AQ-O3. Objective: Achieve riparian and wetland area improvement and maintenance through management of existing uses, wherever feasible.

A1/AQ-O4. Objective: Maintain or improve riparian and wetlands to Properly Functioning Condition.

A1/AQ-O5. Objective: Limit or mitigate ground disturbance in floodplains, riparian areas, and aquatic habitats to prevent soil movement, loss, and sedimentation.

Human Uses and Values

A1/HU-O1. Objective: Provide a broad spectrum of developed and dispersed recreation opportunities and activities in a range of settings.

A1/HU-S1. Standard: Use the recreation opportunity spectrum (ROS), or appropriate agency direction, to guide inventory and

management to meet goals for recreation settings and experiences.

A1/HU-S2. Standard: Manage recreation settings and facilities to provide safe and sanitary recreation experiences, protect facilities, sites and resources, and meet user needs.

A1/HU-S3. Standard: Protect and manage established dispersed recreation sites and special places.

A1/HU-O2. Objective: Maintain and enhance the visual character of the landscape.

A1/HU-S4. Standard: Meet or exceed established visual quality objectives using management principles and ecological techniques from the appropriate agency Landscape Management Systems.

A1/HU-O3. 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.

A1/HU-G1. Guideline: Developing and strengthening partnerships can be emphasized while managing and enhancing resource use (fish, wildlife, recreation, others).

A1/HU-G2. Guideline: Coordinate fire management activities in rural interface areas with local governments, agencies, and landowners.

A1/HU-O4. Objective: Foster public awareness of, involvement in, and support for National Forest and BLM District land management objectives and programs.

A1/HU-O5. 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.

A1/HU-S5. Standard: Provide a predictable supply of timber and other forest products within sustainable limits of the ecosystem(s).

A1/HU-S6. Standard: Provide a predictable supply of livestock and wild horse forage within sustainable limits of the ecosystem.

Tribal Interests

A1/HU-06. Objective: Provide for ceded land rights and treaty privileges of American Indians.

A1/HU-07. Objective: Consult and coordinate planning and management activities with the tribes.

Locatable Minerals

A1/HU-08. Objective: Provide opportunity for the exploration and development of mineral resources in areas identified as open to operations, subject to appropriate regulations.

A1/HU-S7. Standard: As required by applicable mining laws, provide access for exploration and development of locatable mineral resources.

A1/HU-S8. Standard: Where necessary to protect important lands and resources, mineral exploration and development shall be subject to additional restrictions or stipulations. The least restrictive limitations necessary for resource protection should be used.

A1/HU-S9. Standard: Where practical, surface disturbance from mining operations shall be reclaimed by taking measures that will prevent or control on-site and off-site damage to the environment and surface resources.

Leasable Minerals

A1/HU-09. Objective: Provide leasing opportunities for oil, gas, coal, and geothermal exploration and development subject to appropriate regulations and requirements in areas identified as open to operations.

A1/HU-S10. Standard: Provide access for exploration and development of leasable mineral resources, subject to applicable laws and regulations.

A1/HU-S11. Standard: All exploration applications shall receive appropriate environmental review and NEPA documentation prior to authorization.

A1/HU-S12. Standard: In order to protect special resource values and investments, leasing shall be subject to appropriate lease notices and lease stipulations.

A1/HU-S13. Standard: Ensure that operations are in compliance with appropriate regulations

and that inspections are conducted in accordance with agency policies and procedures.

A1/HU-S14. Standard: All surface disturbance from mining operations should be reclaimed to a productive condition, to the extent reasonable and practicable.

A1/HU-O10. Objective: Provide and manage a safe and economical transportation system to provide public access and meet resource and protection objectives.

A1/HU-S15. Standard: Plan, develop, operate, and maintain leasable mineral activity sites according to agency standards and objectives for planned uses and activities, safety, economics, and impacts on lands and resources.

Implementation, Adaptive Management, and Monitoring

A1/IA-O1. Objective: For riparian areas, set measurable objectives and monitoring for key parameters such as stream surface shading, streambank stability, and shrub cover.

A1/IA-S1. Standard: Ensure that operations are in compliance with appropriate regulations and that inspections are conducted in accordance with agency policies and procedures.

Alternative 2

Physical Environment

Same direction as Alternative 1.

Terrestrial Ecosystems

Forested Lands

Same direction as Alternative 1.

Rangelands

Same direction as Alternative 1.

Terrestrial Species and Habitats

Same direction as Alternative 1.

Wilderness and Reserves

Same direction as Alternative 1.

Aquatic Ecosystems

Same direction as Alternative 1. In addition, the following objectives and standards apply to areas identified in decision notices for PACFISH, INFISH, and/or BLM statewide Interim Bull Trout Habitat Conservation Strategies. All standards apply to all four objectives. See Appendix G/3-4 for additional information.

A2/AQ-01. 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.

A2/AQ-02. Objective. Provide protection for all watersheds containing designated critical habitat for listed anadromous fish (Key Watersheds).

A2/AQ-03. Objective. Provide a pattern of protection across the landscape with an emphasis on bull trout for watersheds that have strong assemblages of inland native fish, degraded watersheds with a high restoration potential, and watersheds that provide for metapopulation objectives (Priority Watersheds).

A2/AQ-04. Objective. Improve current conditions of watersheds by restoring degraded habitat and providing long-term protection to natural resources, including riparian and aquatic resources.

A2/AQ-S1. Standard. Prohibit timber harvest, including fuelwood cutting, in Riparian Conservation Areas (RCAs), except as described below. Do not include RCAs 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 RCAs 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 RCAs.

b. Apply silvicultural practices for RCAs 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.

A2/AQ-S2. 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.

A2/AQ-S3. 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 RCAs.

b. Road and landing locations in RCAs 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 RCAs.

A2/AQ-S4. 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 RCAs.
- 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.

A2/AQ-S5. 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.

A2/AQ-S6. Standard. Provide and maintain fish passage at all crossings of existing and potential fish-bearing streams.

A2/AQ-S7. 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.

A2/AQ-S8. Standard. New livestock handling and/or management facilities shall be located outside of RCAs. For existing livestock handling facilities inside RCAs, assure that facilities do not prevent attainment of RMOs. Relocate or close facilities where these objectives cannot be met.

A2/AQ-S9. 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.

A2/AQ-S10. Standard. Adjust wild horse and burro management to avoid impacts that prevent attainment of RMOs or adversely affect aquatic resources.

A2/AQ-S11. 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 RCA, 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 near 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.

A2/AQ-S12. Standard. Locate structures, support facilities, and roads outside RCAs. Where no alternative to siting facilities in RCAs exists, locate and construct the facilities in ways that avoid impacts to RCAs 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.

A2/AQ-S13. Standard. Prohibit solid and sanitary waste facilities in RCAs. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in RCAs 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 RCAs.
- 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.

A2/AQ-S14. Standard. For leasable minerals, prohibit surface occupancy within RCAs 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.

A2/AQ-S15. Standard. Permit sand and gravel mining and extraction within RCAs only if no alternatives exist, if the action(s) will not retard or attainment of RMOs, and if adverse effects to native aquatic species can be avoided.

A2/AQ-S16. 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.

A2/AQ-S17. 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.

A2/AQ-S18. Standard. Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RCAs. If the only suitable location for such activities is within the RCAs, 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.

A2/AQ-S19. 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.

A2/AQ-S20. Standard. Prescribed burn projects and prescriptions should be designed to contribute to the attainment of the RMOs.

A2/AQ-S21. Standard. Immediately establish an emergency team to develop a rehabilitation treatment plan to attain RMOs and avoid adverse effects on aquatic resources whenever RCAs are significantly damaged by a wildfire or a prescribed fire is burning out of prescription.

A2/AQ-S22. 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.

A2/AQ-S23. Standard. Locate new hydroelectric ancillary facilities outside RCAs. For existing ancillary facilities inside the RCA 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 RCAs to avoid adverse effects on aquatic resources.

A2/AQ-S24. 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.

A2/AQ-S25. 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.

A2/AQ-S26. Standard. Prohibit storage of fuels and other toxicants within RCAs. Prohibit refueling within RCAs unless there are no other alternatives. Refueling sites within RCAs shall be approved by the Forest Service or Bureau of Land Management and have an approved spill containment plan.

A2/AQ-S27. 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.

A2/AQ-S28. 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.

A2/AQ-S29. Standard. Design and implement fish and wildlife habitat restoration and enhancement actions in a manner that contributes to attainment of the RMOs.

A2/AQ-S30. 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 RCAs, assure that RMOs are met and adverse effects on aquatic resources are avoided. Where RMOs cannot be met or adverse effects on aquatic resources avoided, relocate or close such facilities.

A2/AQ-S31. 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.

A2/AQ-S32. Standard. Complete ecosystem analysis prior to construction of new recreation facilities in RCAs.

A2/AQ-S33. Standard. For existing recreation facilities inside RCAs, 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.

A2/AQ-S34. 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.

Human Uses and Values

Same direction as Alternative 1.

Implementation, Adaptive Management, and Monitoring

Same direction as Alternative 1.

Alternatives 3 through 7

Objectives and standards for Alternatives 3 through 7 are found in table 3-5. The Ecosystem Management section, which comes first in the table, provides the umbrella for management of Forest Service- and BLM-administered lands in the planning area. Restoration and conservation strategies are integrated within each alternative. A key component of these strategies is use of hierarchical scale relations which includes subbasin scale review and watershed scale analysis to provide context for prioritization of restoration or conservation management.

Landscape Approach

One intent of Alternatives 3 through 7 is to provide direction to manage landscapes to conserve or restore long-term ecological processes and patterns consistent with achieving short-term and long-term aquatic, terrestrial, and socioeconomic objectives. The Science Integration Team's Landscape chapter of the *Assessment of Ecosystem Components* (1996) identified important patterns, processes, and disturbance mechanisms that together provide ecological functions at scales ranging from individual sites to beyond the project area. Cause-and-effect relationships operate at each scale and among scales. These alternatives prescribe planning/analysis processes that are designed to account for these cause-and-effect relationships. The landscape assessment found that taking "no action" (that is, continuing current practices, which suppress disturbances such as fire, insects, disease, or others resulting from active vegetation management) has a stronger influence in adversely affecting long-term landscape outcomes than does taking specific management actions to manage risks to landscape processes. Thus, in each alternative it is intended that managers consider where and

when specific actions will be taken, as well as where and when to take no action. Such a consideration can best provide for landscapes with ecological processes, vegetation patterns, and disturbance mechanisms that are consistent with the objectives of the alternatives.

Scale of Analysis

It is intended that ecosystem analysis should be tailored to the issue or situation; ecosystem analysis should not be seen as an identical process or magnitude for every situation.

The scale of ecosystem analysis is determined by considering the type of interactions, processes, and conditions (including known values such as cultural and economic) being affected on the landscape.

For example, on large blocks of rangeland where water is scarce and topography is relatively flat, it is appropriate to use a meaningful and efficient boundary as long as the logic and processes of ecosystem analysis are followed and the product provides context and information for decisions.

Process versus Prescriptive/ Interim versus Permanent Standards

Table 3-5 lists standards that establish or define processes as well as those that set parameters for certain conditions or activities. Standards were developed to meet objectives and provide assurance or reliability that intended actions will be achieved. Process standards (such as EM-S1) are intended to be implemented as stated. For standards that prescribe parameters (such as TE-S2), it is recognized that conditions vary within the EIS (planning) area and that standards have effects at multiple scales and cause interactions or effects with other components of the ecosystem over time across the landscape. Local conditions, ecological attainability, risks, and cause-effect relationships with other ecosystem components may create a need to modify how a manager fulfills the intent of a standard to more effectively meet objectives. Each alternative describes the analysis required to modify non-process ICBEMP standards while providing equal or greater assurance of meeting objectives.

Ecosystem Analysis at the watershed scale (using the related six-step logic process, as described in the *Federal Guide for Watershed Analysis*) is the method of analyzing conditions,

The User's Guide at the end of this chapter provides a step-by-step process to assist in understanding the alternatives.

trends, issues, risks, and interactions. This process is tiered to assessments and decisions at other scales and is done collaboratively with interagency and other involvement. Based on this process, there may be needs or opportunities to modify the application of standards to more effectively meet objectives at the local level. Results would be documented through NEPA processes.

Interpretation of Activity Tables

Activity tables (tables 3-6 and 3-7) were developed for each forest and range cluster by alternative to aid in analysis of effects, to allow projection of outcomes if the various alternatives were to be implemented, and to indicate relative differences among alternatives. *The activity levels are not targets or allocations.* They are predicted activities, expressed in ranges of numbers, which focus on areas of treatment as opposed to traditional outputs such as timber volume or grazing animal unit months. Objectives depend on Tables 3-6 and 3-7 to differentiate management activity rate, location, and priority among Alternatives 3 through 7. The activities displayed in Tables 3-6 and 3-7 are the active methods that are most often anticipated and associated with restoration of ecological function and processes. A more complete explanation of how the numbers were derived and what is meant by the various activities can be found in Appendix L in the section entitled "Ruleset".

Roads Standards

The roads standards (RM-O1 - RM-O4, RM-S1 - RM-S15) acknowledge the needs for roads for management purposes and public use. The standards are designed, however, to also address findings in the *Scientific Assessment* (Quigley and Arbelbide 1996) related to adverse effects on aquatic and terrestrial habitat. Reducing these impacts to aquatic and terrestrial habitat may cause additional effects to other ecosystem components over time. These cause-effect relationships should be explored and analyzed

during ecosystem analysis at the watershed scale and/or in project NEPA analysis. Management activities should reflect an understanding of these relationships over time across the landscape.

Reducing road-related adverse effects will be guided by information and tables in the Rule Set that display forest and range cluster road density reduction priorities, results of the Road Risk Inventory, the need to meet RMOs and terrestrial objectives, and the need to improve overall ecological integrity. In setting priorities and implementing management actions, cause-effect relationships with other ecosystem components including ecological integrity will be considered across the landscape over time. With the extent of the existing road network and the variety of needs, uses, and impacts, actions to reduce adverse impacts will focus on areas or situations where risks are highest.

Relationship of Alternatives 1 and 2 to Table 3-5

Table 3-5 elaborates on Alternatives 3 through 7 but also includes reference to the previous pages of this chapter in which Alternatives 1 and 2 are summarized. Information for Alternatives 1 and 2 is abbreviated in Table 3-5 because the many individual Forest Service and BLM land-use plans and framework documents are written at a more detailed scale than is appropriate for this project. Direction from those plans was generalized and consolidated into objectives, standards, and guidelines that are representative of existing plans at the broad scale to provide a point of comparison for Alternatives 3 through 7. Wherever possible, Table 3-5 refers to the corresponding objectives, standards, and/or guidelines from Alternatives 1 and 2, presented on the previous pages, in order to facilitate comparison among all alternatives. See the introduction to Chapter 3 for further discussion of current direction and the development of alternatives.

Navigating Table 3-5

An index to Table 3-5 immediately precedes table 3-5 to facilitate finding objectives and standards of interest. A User's Guide to the Action Alternatives follows the Comparison of Alternatives section and provides detailed information on the construction of the alternatives.

Index to Objectives and Standards in Table 3-5

Implementing Ecosystem Management

- EM-01** **Implement ICBEMP using multi-scaled hierarchical analysis**
EM-02 **Implement ICBEMP using collaborative intergovernmental approach**

Sub-basin Review

- EM-03** **Conduct brief sub-basin reviews**
 EM-S1 Complete sub-basin reviews within 1-3 years
 EM-S2 Things to consider during sub-basin review
 EM-S3 Collaborative, interagency sub-basin review shall prioritize EAWS
 EM-S4 Use sub-basin review for EAWS and land use plan revisions

Ecosystem Analysis at the Watershed Scale

- EM-04** **Conduct ecosystem analysis at the watershed scale (EAWS)**
 EM-S5 Federal Guide for EAWS shall be used
 EM-S6 Line officers shall set the scope of EAWS
 EM-S7 Category 1 sub-basins EAWS “trigger”
 EM-S8 Listed, Proposed, Candidate species EAWS “trigger”
 EM-S9 Low road density EAWS “trigger”
 EM-S10 Large blocks of native rangeland EAWS “trigger”
 EM-S11 Screening process to exempt activities from EAWS
 EM-S12 Four-year transition period in Category 2 and 3 sub-basins
 EM-S13 Restrictions on modifying standards, including RMOs and RCAs
 EM-S14 Use EAWS to provide context for land management activities

Physical Environment

Soil Productivity

- PE-01** **Maintain soil productivity**
PE-02 **Maintain riparian soils to ensure high quality water**
PE-03 **Develop soil productivity protection and restoration programs**
PE-04 **Restore and maintain nutrient cycling**
 PE-S1 Recommendations for managing coarse woody debris
 PE-S2 Recommendations for amounts of coarse woody debris after wildfire
 PE-S3 Recommendations for large diameter standing live and/or dead wood

Air Quality

- PE-05** **Protect air quality/comply with Clean Air Act requirements**
 PE-S4 Assess management activities that may affect air quality

Terrestrial Strategies

- TS-01** **Maintain and promote native plant communities**
 TS-S1 Maintain or improve native plant communities

Fire Disturbance Processes

- TS-02** **Restore fire as natural disturbance process**
TS-03 **Rehabilitate disturbed areas**
 TS-S2 Rehabilitate/revegetate disturbed areas with ecologically appropriate species
 TS-S3 Use native species in rehabilitation seedings
 TS-S4 Rest burned areas from grazing to maintain soil productivity

Index to Objectives and Standards in Table 3-5 (continued)

Noxious Weeds

- TS-O4 Manage noxious weeds across jurisdictional/political boundaries**
 TS-S5 Implement IWM strategy/ 7 steps of strategy
 TS-S6 Implement IWM strategy on forest lands
- TS-O5 Implement IWM strategy on rangelands**
 TS-S7 Implement steps of IWM strategy, Range Clusters 2 (alts 3,4,&7 outside); 2 and 4 (alt 5); and 2,3,&5 (alt 6)
 TS-S8 Implement steps IWM strategy, Range Clusters 3 (alts 3 & 5); and 1,3,4, 5& 6 (alt 4)
 TS-S9 Implement steps IWM strategy, Range Cluster 5 (alt 3 & 5)
 TS-S10 Implement steps IWM strategy, Range Clusters 1,4,&6 (alt 3&7 outside); 1&6 (alt 5); 1,3,4,5,&6 (alt 6)

Forestlands

Dry Forest

- TS-O6 Restore ecosystem processes /Dry Forest**
 TS-S11 Increase ppine and wlarch in mature/old single & multi-story forests
 TS-S12 No harvest of dominant or co-dominant ppine outside reserves
 TS-S13 No silvicultural treatments in mature/old forests outside reserves
 TS-S14 No commercial harvest in dry forest terrestrial reserves
- TS-O7 Manage suitable lands to produce commodities/maintain ecosystem**

Moist Forest

- TS-O8 Restore ecosystem processes /Moist Forest**
 TS-S15 Maintain viability of and increase western white pine
 TS-S16 Plant blister-rust-resistant stock/increase western white pine
 TS-S17 Increase dominance of early successional, shade-intolerant species
 TS-S18 No harvest of dominant or co-dominant ppine outside reserves
 TS-S19 No silvicultural treatments in mature/old forests outside reserves
 TS-S20 No commercial harvest in moist forest terrestrial reserves
- TS-O9 Manage suitable lands to produce commodities/maintain ecosystem**

Cold Forest

- TS-O10 Restore ecosystem processes /Cold Forest**
 TS-S21 Maintain viability of/increase whitebark pine and subalpine larch
- TS-O11 Manage suitable lands to produce commodities/maintain ecosystem**

Rangelands

- TS-O12 Restore or maintain rangeland health**
 TS-S22 Implement strategies to maintain/restore watershed function
 TS-S23 On dry shrublands, manage grazing during/after drought years
- TS-O13 Produce livestock forage while restoring ground cover and productivity**
- TS-O14 Reduce encroachment of junipr, conifers, and sagebrush**
- TS-O15 Restore dry grass/dry shrub/cool shrub**
 TS-S24 No livestock grazing in reserves
 TS-S25 No range improvement projects in reserves
- TS-O16 Produce livestock forage and conserve cool shrub/dry shrub/dry grass**

Aquatic / Riparian Strategies

- AQ-O1 Emphasize riparian and aquatic processes and functions**
AQ-O2 Maintain high quality aquatic and riparian habitat
AQ-O3 Protect high quality waters and identify and maintain habitats
AQ-O4 Category 1 sub-basins: Maintain watersheds
AQ-O5 Restore watersheds where they have been degraded
AQ-O6 Implement watershed restoration activities based on priorities

Index to Objectives and Standards in Table 3-5 (continued)

AQ-07	Category 2 sub-basins: Maintain strongholds and restore watersheds
AQ-08	Timber and livestock priority areas: Conserve species strongholds
AQ-09	Category 3 sub-basins: Maintain strongholds
AQ-010	Manage riparian vegetation consistent with site potential

Watershed and Riparian Restoration

AQ-S1	Watershed restoration projects to promote long-term ecological integrity
AQ-S2	Attain PFC as a first step
AQ-S3	Develop watershed plans for instream structures and road obliteration/reconstruction
AQ-S4	Offset new sediment-producing activities with sediment abatement
AQ-S5	Design fish/wildlife habitat restoration/enhancement to attain RMOs

Timber Management

AQ-S6	Forest vegetation management in RCAs
AQ-S7	Zone 1 - management to achieve or maintain characteristic stream/valley conditions
AQ-S8	Zone 2a - manage as buffer to Zone 1
AQ-S9	Zone 1 and 2a - not included in suitable timber base
AQ-S10	Zone 2b - manage as additional buffer to Zones 1 and 2a

Grazing Management

AQ-S11	Priorities for revising AMPs based on sub-basin reviews
AQ-S12	Attaining PFC and RMOs
AQ-S13	Limit handling efforts to not prevent attainment of RMOs
AQ-S14	New livestock handling facilities to be located outside RCAs
AQ-S15	No livestock grazing in RCAs in or adjacent to designated critical habitat
AQ-S16	Suspend grazing where riparian protection can't be implemented
AQ-S17	Adjust wild horse management to avoid impacts to RMOs/aquatic resources

Minerals Management

AQ-S18	Locatable minerals - Avoid or minimize adverse impacts to aquatic resources
AQ-S19	Locate structures outside of RCAs where practicable
AQ-S20	Mine wastes and toxic chemicals
AQ-S21	Leasable minerals - No surface occupancy in RCAs
AQ-S22	Restrictions on sand and gravel extraction within RCAs
AQ-S23	Develop inspection, monitoring, and reporting requirements

Recreation Management

AQ-S24	Prevent or minimize adverse effects to from recreation facilities in RCAs
AQ-S25	Design recreation facilities to not retard/prevent attainment of RMOs
AQ-S26	Existing recreation facilities in RCAs to not prevent attainment of RMOs
AQ-S27	Fish/wildlife user facilities to not prevent attainment of RMOs
AQ-S28	Adjust recreation practices that retard or prevent attainment of RMOs

Fire Suppression/Fuels Management

AQ-S29	Fuel treatment/fire suppression to not prevent attainment of RMOs
AQ-S30	Fire suppression activities restrictions in RCAs
AQ-S31	Locate centers for fire incident activities outside of RCAs
AQ-S32	Prohibit delivery of chemicals to surface waters
AQ-S33	Prescribed burns/prescriptions consistent with attainment of RMOs
AQ-S34	Prohibit backfire operations that increase fire intensities in RCAs
AQ-S35	Establish team to develop rehab plan to attain RMOs

Lands/Permits/Facilities

AQ-S36	For hydro projects, require instream flows to maintain resources
AQ-S37	Complete EAWS prior to issuing water conveyance permits
AQ-S38	Determine/establish instream flow requirements for species needs
AQ-S39	Revoke conveyance permits for those without state water rights

Index to Objectives and Standards in Table 3-5 (continued)

AQ-S40	All water conveyance intakes shall meet established standards
AQ-S41	Conveyance permits require best methodology to conserve water
AQ-S42	Hydroelectric ancillary facilities to not prevent attainment of RMOs
AQ-S43	New developments that may adversely affect RCAs not permitted
AQ-S44	Leases, permits, etc., to avoid effects inconsistent with attainment of RMOs

Additional Riparian Management

AQ-S45	Eliminate or reduce risks from transport of toxic chemicals
AQ-S46	Develop contingency plans for chemical spills or contamination
AQ-S47	Herbicides etc. to not retard or prevent attainment of RMOs
AQ-S48	Prohibit storage of fuels and toxicants within RCAs
AQ-S49	Locate water drafting sites to avoid adverse effects on aquatics

AQ-O11 **Manage grazing in wetlands to prevent impairment of functions**

AQ-O12 **Minimize disturbance to redds for candidate & sensitive species**

AQ-S50	Manage livestock to prevent disturbance to redds for T, E, P species
AQ-S51	Manage livestock to minimize impacts on redds for C & S species

Water Quality

AQ-O13 **Maintain and improve water quality**

AQ-S52	Maintain water quality in Outstanding Resource Waters
AQ-S53	Comply with state or tribal anti-degradation requirements
AQ-S54	Comply with TMDLs in Water Quality Limited segments
AQ-S55	Incorporate state WQLS priority lists into intergovernmental prioritization process
AQ-S56	Adjust activities to meet water quality standards

AQ-O14 **Develop management actions supported by EAWS to restore WQLS**

Terrestrial and Aquatic Species and Habitats

HA-O1 **Restore and/or maintain and habitat conditions**

Viable populations

HA-O2 **Provide habitat for viable populations, recovery of listed spp, social needs**

HA-S1	Manage habitats for long-term viability, especially edge of range
HA-S2	Management to restore vegetation composition, linkage, patch size
HA-S3	Restore/maintain habitats for free movement between habitat blocks
HA-S4	Improve/restore linkages at known habitat bottlenecks
HA-S5	Develop mature/old forest structural definitions
HA-S6	Analysis and strategies for mature/old structure stands
HA-S7	Use local analysis to develop snag levels
HA-S8	Use local analysis to develop downed wood levels
HA-S9	Manage firewood programs consistent with snag and downed wood standards
HA-S10	Restore mountain mahogany, bitterbrush, quaking aspen
HA-S11	Restore native plants on important wild ungulate winter range
HA-S12	Protect bat roost sites and hibernacula

Protection/Restoration of Listed Species Habitats

HA-O3 **Restore or protect habitat for listed species; manage habitat to prevent listing**

HA-S13	Manage habitats to recover special status species, prevent listings
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HA-O4 **Manage rangelands for special status species habitat requirements**

HA-O5 **Provide for continued existence and long-term conservation of species**

Recovery of Federally Listed Aquatic and Terrestrial Species

HA-O6 **Contribute to range-wide recovery of federally listed or proposed species**

HA-S14	Implement recovery plans, document departures
HA-S15	Apply standards & guides from recovery documents for raptors
HA-S16	Adopt IGBC grizzly bear resource management guidelines/situations

Index to Objectives and Standards in Table 3-5 (continued)

HA-S17	Management activities consistent with IGBC access management recommendations
HA-S18	Habitat mapping/cum effects in high road density recovery areas
HA-S19	Evaluate IGBC strategy for reducing grizzly bear mortalities, Selkirk and Cabinet/Yaak

Wildlife and Livestock Conflicts

HA-O7	Management practices to reduce conflicts: livestock / carnivores & bighorn / domestic sheep
HA-S20	Minimize conflicts between carnivores and livestock mgt. practices
HA-S21	Reduce potential disease transmission between bighorn / domestic sheep

Human Uses and Values

Collaboration

HU-O1	Foster support of decisions by promoting collaboration - broad range
HU-O2	Foster support of decisions by promoting collaboration - intergovernmental
HU-S1	Initiate MOU to offer advice to federal land managers

Economic Activity

HU-O3	Derive soc/econ benefits, promote commercial activities
HU-O4	Efficiently deliver goods and service from FS/BLM-administered lands
HU-O5	Minimize large annual shifts in commercial activity
HU-O6	Emphasize customary economic uses in rural communities
HU-O7	Contribute to economic diversity/local economic development goals
HU-O8	Collaborate with local entities for compatibility of land uses
HU-O9	Reduce risk of life/property loss due to wildfire; decrease costs
HU-S2	Involve locals in development of coordinated fuel management plans

Recreation Opportunities

HU-O10	Supply recreation opportunities consistent with public policies/abilities
HU-S3	Use ROS to meet recreation management goals
HU-O11	Identify opportunities to provide public access for recreation
HU-O12	Foster and strengthen partnerships to manage facilities & services
HU-O13	Meet visual quality objectives
HU-O14	Maintain or enhance scenic integrity

Cultural Resources

HU-S4	Survey and evaluate significance of federal lands for cultural resources
HU-S5	Evaluate and nominate sites to NRHP
HU-S6	Assess site-specific projects for effects on cultural resources

Transportation and Utility Corridors

HU-O15	Ensure reliable and buildable utility corridors
HU-S7	Use 1993 Western Regional Utility Corridor Study as reference
HU-O16	Ensure access essential for corridor infrastructure maintenance
HU-S8	Provide access to and maintenance of existing utility ROW
HU-O17	Encourage integrated ROW vegetation management to minimize impacts

Federal Trust Responsibility and Tribal Rights and Interests

Government-to-Government Cooperation and Relations

TI-O1	Maintain government-to-government relationship with affected tribes
TI-S1	Use consistent approach to government-to-government consultation
TI-S2	Agreements with tribal governments regarding repatriation procedures
TI-S3	Recognize tribal management efforts and work cooperatively

Index to Objectives and Standards in Table 3-5 (continued)

TI-02	TI-S4	Cooperate with tribes to restore/research treaty/trust resources
		Assess sense of place and incorporate into management
	TI-S5	Complete place assessments as part of ecosystem analysis

Habitat Conditions

TI-03		Recognize native plant communities as traditional resources
	TI-S6	Establish programs for restoration/maintenance of native plant communities
	TI-S7	Provide habitat conditions to support harvestable resources
	TI-S8	Consider protection/restoration of treaty resources on ceded lands
	TI-S9	Assess habitat where it has social/ traditional importance
	TI-S10	Adopt aquatic conservation strategy
	TI-S11	Least restrictions on tribes to implement ESA conservation measures

Road Management

RM-01		Cooperate with partners on road design, operations, maintenance
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Road-related Adverse Effects

RM-02		Reduce road-related adverse effects
	RM-S1	Reduce road-related adverse effects
	RM-S2	Timber and livestock priority areas: management actions to not increase erosion, sediment
	RM-S3	Conduct Road Condition/Risk Assessment
	RM-S4	Develop or revise Access and Travel management plans
	RM-S5	Reduce effects on aquatic, riparian, terrestrial species and habitats
	RM-S6	Determine habitat effectiveness ratings to reduce risk caused by human access
	RM-S7	Design and improve culverts to accommodate 100-year floods

Road Density

RM-03		Reduce road density where roads have adverse effects
	RM-S8	Decrease road miles in High and Extreme road density classes
	RM-S9	Use existing transportation networks in High & Extreme classes

Road Construction

RM-04		New road construction to prevent or minimize adverse effects
	RM-S10	Roads and landings should be outside RCAs
	RM-S11	Timber and livestock priority areas: no roads within 150' of active channel margins
	RM-S12	Maintain/restore fish passage, spawning, etc.
	RM-S13	Avoid high hazard areas, prevent sediment delivery to streams and RCAs
	RM-S14	Prohibit side casting in RCAs
	RM-S15	Don't increase road density by more than one density class in areas with none/low/very low road densities
	RM-S16	No road construction in reserves or unroaded areas > 1,000 acres

Adaptive Management / Monitoring

Adaptive Management

AM-01		Make appropriate adjustments in management strategies
	AM-S1	Use adaptive management principles
	AM-S2	Adjustments to 'reserve' boundaries

Index to Objectives and Standards in Table 3-5 (continued)

Monitoring

- AM-02 Monitor changes in conditions and take action to meet ecosystem management goals**
- AM-S3 Develop integrated intergovernmental monitoring and evaluation protocol
 - AM-S4 Implement annual monitoring programs at various scales
 - AM-S5 Critical monitoring shall be implemented immediately
 - AM-S6 Update riparian monitoring within grazing allotments
 - AM-S7 Use monitoring to modify management actions to achieve objectives

Accountability

- A-01 Line officers are accountable for implementation**
- A-S1 State Directors/Regional Foresters ensure accountability
 - A-S2 Develop interagency implementation MOU
 - A-S3 Provide opportunities for participation in implementation oversight
 - A-S4 Implement accountable, measurable standards

