

Proposed Upper Deschutes Resource Management Plan and Final Environmental Impact Statement

October 2004

Volume 1 – Executive Summary
and Chapters 1, 2, and 3



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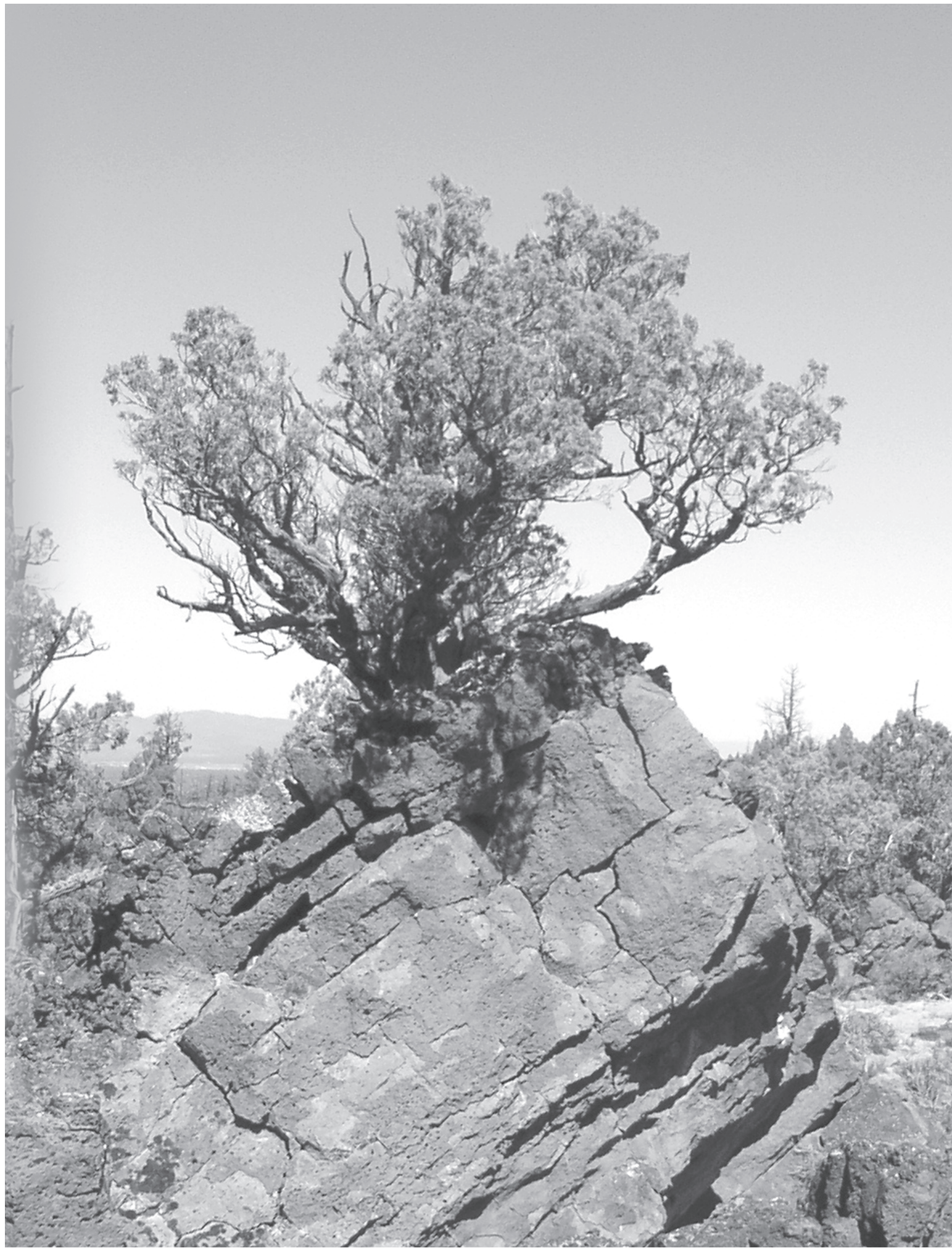
As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.



**Volume 1 – Proposed Upper Deschutes
Resource Management
Plan and Final Environmental Impact
Statement**

**Executive Summary and
Chapters 1, 2, and 3**

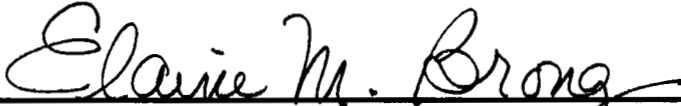
Volume




U.S. Department of the Interior
Bureau of Land Management

**Proposed Upper Deschutes
Resource Management Plan
and
Final Environmental Impact
Statement**

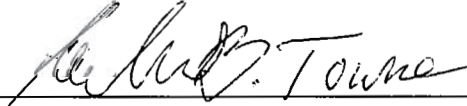
Prepared by
Deschutes Resource Area Office
Prineville District
September 2004



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Proposed Upper Deschutes Resource Management Plan and Final Environmental Impact Statement

1. **Responsible Agency:** United States Department of the Interior, Bureau of Land Management
2. **Cooperating Agencies:** Deschutes County, City of Redmond, Oregon Department of Transportation, Federal Highway Administration, and Oregon Military Department.
3. Draft () **Final (X)**
4. **Administrative Action (X)** Legislative Action ()

Abstract: The Draft Upper Deschutes Resource Management Plan and Environmental Impact Statement analyze seven alternatives for managing approximately 404,000 acres of land administered by the Bureau of Land Management in Central Oregon. Small portions of these lands are located in the northern Klamath County and the southern portion of Jefferson County. About 57% of the lands are in Deschutes County while about 36% are in Crook County. Each of the Action Alternatives would Revise the 1989 *Brothers/La Pine Resource Management Plan* (B/LP RMP) for the western portion of its planning area and change the boundary of the Two Rivers Resource Management plan by incorporating about 15,000 acres (3,694 acres administered by the BLM) into the B/LP RMP planning area. Minor decisions would amend the Middle Deschutes and Lower Crooked River Wild and Scenic River Plans. The seven alternative combinations of land use allocations and allowable uses respond to the significant issues identified during scoping: Ecosystem Health, Land Uses, Recreation, Transportation and Utility Corridors, Land Ownership, Public Health and Safety, Archaeology, and Social and Economic Values. Alternative 7 has been identified as the Preferred Alternative.

Alternative 1 – Current Management (No Action/No Change).

Common to Alternatives 2 through 7 – Some common changes to the current management would be adopted in Alternatives 2-7.

Alternative 2 – This alternative would emphasize providing multiple uses within most of the planning area.

Alternative 3 – This alternative would emphasize managing for wildlife and would separate recreational uses. Areas of Critical Environmental Concern (ACEC) would be used to meet wildlife and other management objectives.

Alternative 4 – Alternative 4 combines the approaches used in Alternatives 2 and 3. ACECs would provide special management objectives for ecosystem and wildlife habitat values, but on a smaller scale than in Alternative 3.

Alternative 5 – This alternative would reduce activities that conflict with wildlife habitat objectives within the “urban” areas. It would rely on broad-scale conservation approaches across the planning area.

Alternative 6 – This alternative would reduce activities that conflict with wildlife habitat objectives in “rural” areas. It would rely on smaller-scale conservation approaches across the planning area.

Alternative 7 (Preferred Alternative) – The Preferred Alternative combines features of the previous alternatives. It places an emphasis on wildlife habitat in the southeast or “rural” portion of the planning area, but also permits year-round motorized use in much of that area. It emphasizes separation of recreational uses over shared uses, and distributes recreation areas relatively equally across the planning area.

5. Date comments must be received: The close of the 30-day comment/protest period will be announced in news releases, legal notices, individual mailings, and on the district planning web page <http://www.or.blm.gov/Prineville/planning/Planning.htm>

For further information contact:

Bureau of Land Management, Mollie Chaudet, UDRMP Project Manager Prineville District Office 3050 NE 3rd Street Prineville, Oregon 97754 Telephone: (541) 416-6700



United States Department of the Interior



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IN REPLY REFER TO:

1610 (OR-056)

Dear Reader:

In accordance with the Federal Land Policy and Management Act and the National Environmental Policy Act (NEPA), the Bureau of Land Management (BLM) Prineville District Office has prepared for your review the attached Upper Deschutes Proposed Resource Management Plan and Final Environmental Impact Statement (FEIS/PRMP). This document will revise the Brothers / La Pine Resource Management Plan and modify the boundary of the Two Rivers Resource Management Plan for the lands included in the Upper Deschutes planning area. The FEIS describes and analyzes the potential environmental effects of seven proposed land management alternatives. Alternative 7 is the Preferred Alternative and is detailed in the Proposed RMP.

The Proposed Resource Management Plan and Final Environmental Impact Statement represent the culmination of a three-year commitment by various members of the community to help resolve local, regional, and national issues. I have had the privilege to work with a diverse group of people that brought forward thoughtful ideas about how to manage our public lands into the future to meet a variety of often competing needs. This document concludes the analysis effort and will launch the continuing effort to achieve this long-term vision.

The Draft Upper Deschutes Resource Management Plan and Environmental Impact Statement was made available for a 90-day public comment period in October 2003. Approximately 1,350 letters were received. Substantive comments pertinent to this land use planning process were summarized and are found, along with BLM responses, in Volume 2 of the FEIS/PRMP. Significant changes since the Draft document are summarized in Chapter 1 and the Executive Summary. Additional hard copies, as well as electronic versions, of the FEIS/PRMP may be obtained at the address above. The document is also available on the internet at: www.or.blm.gov/Prineville/Deschutes_RMP/Home.htm

The FEIS/PRMP incorporates both proposed **land use plan decisions** and more specific proposed project level or **implementation decisions**. Land use plan decisions are those which consist of desired outcomes (goals/vision, standards and objectives) and the allowable uses (including allocations, levels of use, and conditions under which future uses may be authorized). Land use plan decisions provide management direction and guide future actions. Land use planning decisions are final and effective upon adoption, while implementation decisions normally require additional decision steps (such as permit approvals) before activities having on-the-ground impacts can be carried out. When land use plan decisions are proposed, the public has an opportunity to *protest* them to the BLM Director prior to their approval. There is no other opportunity for further review of land use plan decisions, and no further administrative remedies for protest resolution. Examples of proposed land use plan decisions subject to protest procedures include but are not limited to the following categories:

- Rights-of-way avoidance/exclusion areas;
- Land tenure zoning classifications;
- Designations of Special Recreation Management Areas;
- Visual Resource Management classifications;
- Travel Management Designations of Open, Closed, or Limited;
- Designation of Areas of Critical Environmental Concern;
- Criteria for establishing future areas available for livestock grazing;
- Primary transportation system classifications and road management objectives;
- Wildland fire management; and
- Lands available for military training

Implementation decisions generally constitute BLM's final approval allowing on-the-ground actions to proceed. These types of decisions require appropriate site-specific planning and NEPA analysis. Unlike land use plan decisions, implementation decisions are not subject to protest under the planning regulations. Instead, implementation decisions are subject to various administrative remedies, primarily appeals to the Office of Hearings and Appeals. Land use planning decisions can be distinguished from implementation decisions in that, although the former are themselves final and effective upon adoption, they normally require additional decision steps (such as permit approvals) before activities having on-the-ground impacts can be carried out.

Proposed **implementation level decisions** are **not** subject to protest under the BLM planning regulations. Rather, a separate appeal process for specific proposed actions will be offered at the time the Final RMP and Record of Decision are approved and made available to the public. Examples of implementation level decisions include:

- Specific permit, lease, or right-of-way grants;
- Allotment-specific permitted use levels;
- Allotment-specific modification of livestock grazing systems that do not require further site-specific analysis;
- Some specific Area of Critical Environmental Concern management direction;
- Specific road and trail restrictions or closures as part of a travel management designation

You now have the opportunity to protest the proposed **land use plan decisions** contained in the FEIS/PRMP. The BLM Planning Regulations, 43 CFR 1610.5-2, state that any person who participated in the planning process and has an interest which may be adversely affected may protest the proposed land use planning decision(s). A protest may raise only those issues that were submitted for the record during the planning process. Protests must be filed within 30 days of the date the Environmental Protection Agency publishes its Notice of Availability of the FEIS in the *Federal Register*. The specific protest period closure date will be announced through one or more of the following: local news media, postcards or newsletters, or the Prineville District website at the internet address above. To be considered timely, your protest must be postmarked no later than the last day of the protest period. Though not a requirement, we suggest you send your protest by certified mail, return receipt requested. You are also encouraged to forward a copy of your protest to the Prineville District Manager at the address included on this letterhead. Written protests must be submitted to the following address:

Director, WO-210/LS-1075
Bureau of Land Management
Attention: Ms. Brenda Hudgens-Williams, Protests Coordinator
Department of the Interior
P.O. Box 66538
Washington DC, 20240

To expedite delivery in the Washington DC area, you may wish to send your protest via one of the express air delivery services to:

Director WO-210/LS-1075
Bureau of Land Management
Attention: Ms. Brenda Hudgens-Williams, Protests Coordinator
1620 L Street NW, Suite 1075
Washington DC, 20036

You may also wish to send a copy (in addition to the signed original sent via regular mail or express delivery) of the protest by FAX or e-mail to Ms. Brenda Hudgens-Williams at:

FAX: 202-452-5112 or e-mail: bhudgens@wo.blm.gov

To be considered complete, your protest must contain the following information at a minimum:

- 1) Name, mailing address, telephone number and the affected interest of the person filing the protest.
- 2) A statement of the issue(s) being protested.
- 3) A statement of the parts(s) of the proposed plan being protested. To the extent possible, reference specific pages, paragraphs, and numbered sections of the document.

- 4) A copy of all your documents addressing the issue or issues which were previously discussed with the BLM
- 5) A concise statement explaining why the proposed decision is believed to be incorrect. This is a critical part of your protest. Document all relevant facts, as much as possible. A protest that merely expresses disagreement with the State Director's proposed decision, without providing any supporting data, will not be considered a valid protest.

We appreciate your help in this planning effort and look forward to your continued interest and participation as the plan is finalized and subsequently implemented. For additional information or clarification regarding this document or the planning protest process, please contact Mollie Chaudet, Project Manager for the Upper Deschutes Resource Management Plan (see above for contact information).

Protests or comments on the FEIS/PRMP, including names and street addresses, will be available for public review at the Prineville District Office during regular business hours 7:30 a.m. to 4:30 p.m., Monday through Friday, except holidays until the protests are resolved. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment/protest. Such requests will be honored to the extent allowed by law. All submissions from organizations and businesses, and from individuals identifying themselves as representatives, or officials of organizations or businesses, will be available for public inspection in their entirety.

Sincerely,

A handwritten signature in black ink that reads "Robert Towne". The signature is written in a cursive, flowing style.

Robert Towne
Deschutes Area Field Manager

Privacy

Comments, including names and street addresses of respondents, will be retained on file in the Prineville District Office as part of the public record for this planning effort. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public inspection, or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

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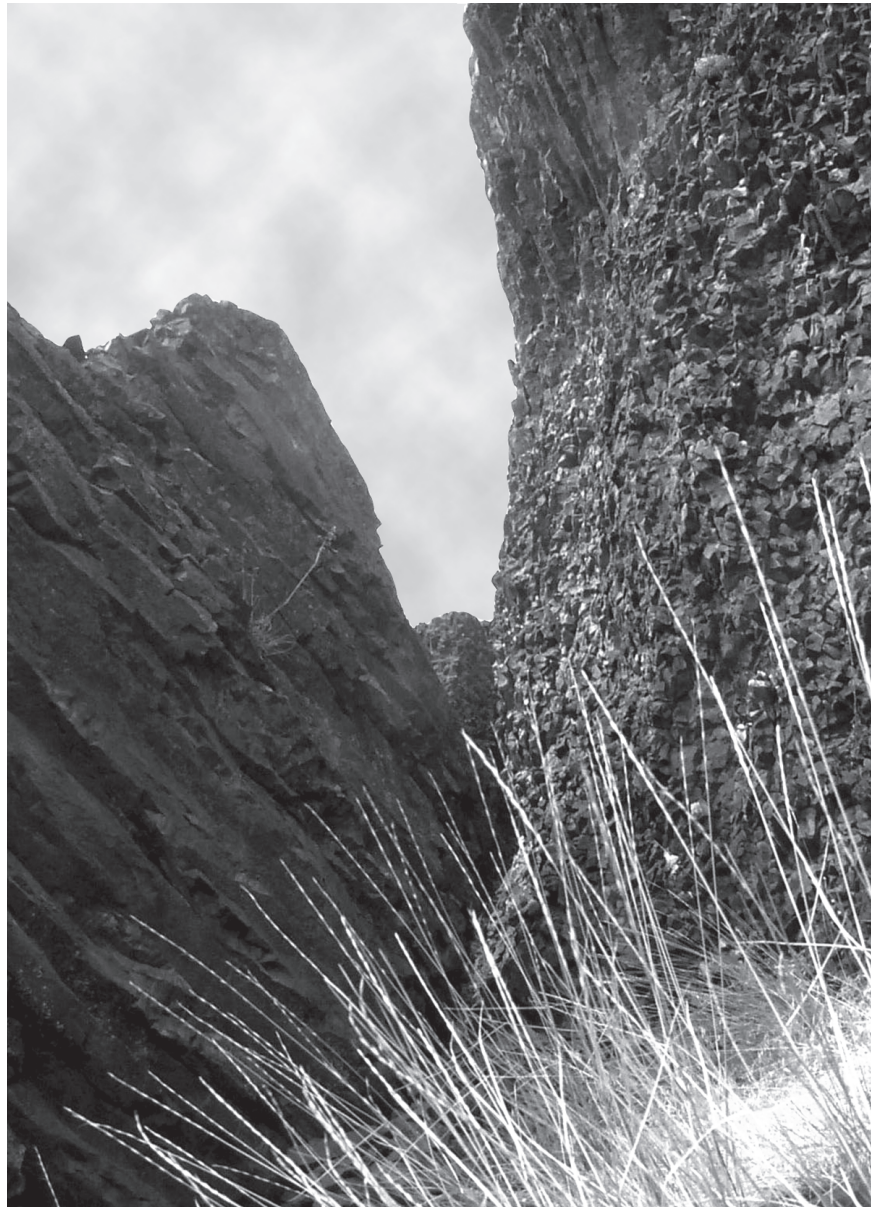
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Proposed Upper Deschutes Management Plan and Appendices See Volume 3

Executive Summary



Introduction

The Upper Deschutes Proposed Resource Management Plan and the Final Environmental Impact Statement (FEIS/PRMP) is presented in three volumes:

- Volume 1 – Signature Page, Abstract, Executive Summary and Table of Contents, Abbreviations and Acronyms, Glossary, and Chapters 1-3.
- Volume 2 – Chapters 4-5, and BLM Responses to Public Comments.
- Volume 3 – Proposed Resource Management Plan (PRMP) and Appendices to the FEIS/PRMP.

Chapter 1 of the FEIS includes a description of the Purpose and Need for Action and the issues that drove the development of the alternatives. Chapter 2 describes the range of alternatives considered in detail and identifies the BLM Preferred Alternative, Alternative 7. Chapter 3 describes the affected environment. Chapter 4 analyzes the environmental consequences of the alternatives. Chapter 5 describes the planning process and collaboration involved in the creation of this document. The BLM Responses to Public Comments includes a summary of public comments received on the Draft EIS and the BLM response to those comments. The PRMP includes a detailed description of the management goals, vision, objectives, allocations and allowable uses, and guidelines for Alternative 7, the Preferred Alternative. The appendices include supplemental and material referenced in the FEIS/PRMP.

Changes Between Draft and Final

The Draft Upper Deschutes Resource Management Plan and Environmental Impact Statement (DEIS) was published in October 2003. The public had 90 days, until January 15, 2004, to submit comments on the Draft EIS. Those comments were considered in making changes to the DEIS which are included in this FEIS. Changes made to the DEIS include the following:

- Changes to the Draft EIS Preferred Alternative.
- Clarifications, corrections, supplemental analysis, and additional information added to various sections of the FEIS/PRMP and some of the maps published with the DEIS. Eight new or modified maps were created and are included with this document.
- Alternative 1 for Fire and Fuels is identified as the Continued Management Direction.
- Appendix A of the DEIS included a description of the management direction (goals, objectives, allocations, allowable uses, and guidelines for future activities) for all alternatives considered in the DEIS. Detailed direction for alternatives other than the Preferred Alternative was not republished with the FEIS/PRMP. Appendix A of the FEIS/PRMP describes the Decisions to be Made, a discussion first published in the *Analysis of the Management Situation* for the Upper Deschutes Planning Area.
- The Proposed Resource Management Plan (PRMP) includes detailed management direction for the Preferred Alternative identified in the FEIS (Alternative 7).

Changes to the Preferred Alternative

Based on the comments received from the public and from internal comments, the following summarizes the substantive changes made to Alternative 7, the Preferred Alternative, between the Draft and Final EIS. These are arranged by topic (in bold), categorized by the type of direction that was modified (in italics), and followed by

bulleted descriptions of the change made to the alternative. BLM Responses to Public Comments includes, among other information, more detailed description of changes made in response to public comments and can be reviewed in Volume 2 of the FEIS/PRMP.

Ecosystem Health and Diversity

- *Modifies “Historic Range of Variability” (HRV) Vegetation Management Theme*
 - a. Focuses on restoration and function
 - b. More emphasis on social/economic concerns
 - c. Recognizes limitations in urban areas
 - d. Focuses more on “Historic Range of Variability” in less urban areas
- *Objectives, rationale, and guidelines for tribal traditional uses of vegetation have been added*
- *Expands environmental consequences analysis*

Land Uses

- *Increases BLM flexibility to resolve conflicts between livestock grazing and other uses/resources*
 - a. Modifies the Grazing Matrix to allow option for allotment closure or creation of Reserve Forage Allotment for more allotments in the “low demand” category.
- *Drops rockhounding collection limits.*
 - a. This issue is now being considered at the national level.
- *Modifies Military Use Areas*
 - a. Drops Steamboat Rock Area
 - b. Changes from “rotation” to “extended” training areas
 - c. Enhances restoration/baseline component
 - d. Technical corrections to objectives & guidelines to clarify the allowable uses within the training area that were carried forward as Continued Management Direction

Recreation & Wildlife

- *More motorized opportunities*
 - a. La Pine seasonal closure to motorized uses is modified
 - b. Modifies prohibition on motorized use in the Tumalo Canal area of Cline Buttes not included in the Tumalo Canals Area of Critical Environmental Concern (ACEC)
 - c. Allows Motorized trail links in Non-Motorized Recreation Emphasis areas
 - d. Adds consideration of limited Off-Highway Vehicle (OHV) development opportunity north of Prineville Reservoir
- *Modifies North Millican Recreation Area direction*
 - a. Reduces habitat effectiveness guidelines based on open motorized travel routes from 70% to 50-60%
 - b. Includes emphasis for integrated/concurrent improvement of habitat on variables other than motorized travel routes when current seasonal closure is changed
 - c. Winter trail use will be permitted in some portions of North Millican.
 - d. Seasonal restrictions placed on both motorized and bicycle use.
- *Modifies direction for shared/separated non-motorized uses*
 - a. Strengthens the overall emphasis on shared use, allows flexibility to separate uses by trail design (mainly equestrian and bicycle)
- *Modifies non-motorized trail density guidelines*
 - a. Changes from numerical to descriptive guidelines based on trail function

- *Modifies language for “minor” wildlife emphasis*
 - a. Changes from “minor” to “general” wildlife emphasis to better reflect the concern for wildlife in those designated areas

Transportation and Utilities

- *The FEIS/PRMP more clearly describes lands available for transportation needs, considers administrative access needs, and contains improved transportation maps.*

Land Ownership

- *Modifies Land Ownership Classifications*
 - a. Reduces amount of Community Expansion lands based on lack of demonstrated need adjacent to the City of Redmond
 - b. Reduces lands classified as Z-2 (BLM administered lands to be retained but may be exchanged for lands of equal or greater resource value) from 83,812 to 62,753 acres
 - c. Increases lands classified Z-1 (BLM administered lands to be retained) from 310,272 to 323,931 acres.
 - d. Increases lands classified Z-3 (BLM administered lands suitable for Disposal) from 5707 to 15,186 acres.

Public Health and Safety

- *Modifies criteria for firearm discharge closures*
 - a. Clarifies when firearm discharge closures are appropriate
 - b. Adds adjacent land management exception to closures
 - c. Adds exception for other government agent
 - d. Includes consideration of developed facilities

Social, Economic

- *The FEIS/PRMP includes added data and analysis on the effects to the local economy from OHV use, rock hounding, mining, and Special Recreation Permits.*
- *The FEIS/PRMP also includes more information on Crook County and the importance of public lands to its population.*

Significant Issues

This planning process is driven by issues surrounding the rapid population growth within and adjacent to the planning area and the increasing demands on natural resources associated with that growth. These issues were organized into nine significant issue categories. These include: Ecosystem Health and Diversity, Land Uses, Visual Resources, Recreation, Transportation and Utility Rights-of-Way, Land Ownership, Public Health and Safety, Archaeological Resources, and Social and Economic Values.

Key Concepts

There are a number of key concepts used to develop the alternatives that are either new, not widely known, or have unique interpretations in this FEIS/PRMP. These are briefly described below.

Planning and Geographic Area Direction

Management direction is applied to specific resources across the planning area as a whole. For instance, there are objectives to manage for an efficient transportation system that apply throughout the planning area. This planning area management direction may be supplemented by additional management direction that applies only within specific geographic areas. The planning area is divided into the following geographic areas:

- Badlands WSA
- Bend/Redmond Recreation Area
- Cline Butte Recreation Area
- Horse Ridge Recreation Area
- La Pine Recreation Area
- Mayfield Recreation Area
- Millican Valley OHV Area
 - a. Millican Plateau
 - b. North Millican
 - c. South Millican
- Northwest Recreation Area
- Prineville Reservoir Recreation Area
- Smith Rock Recreation Area
- Steamboat Rock Recreation Area
 - a. Steelhead Falls WSA
- Tumalo Recreation Area
- Prineville Area

Conflict and Demand

All of the alternatives are concerned with balancing conflict and demand. As described in the issues, the need to revise the Brothers/La Pine Resource Management Plan (B/LP RMP) is based largely on unanticipated potential conflicts and the changing and increasing variety of resource demands in this area. The most obvious conflict is between human uses and wildlife habitat needs, particularly in winter range areas. Conflict also exists between recreational user groups and between adjacent rural or urban residents and public land uses such as motorized recreation, livestock grazing, and mineral development. Weighing the relative amounts of conflicts between uses and/or adjacent residents and the importance (demand) of use was utilized to formulate resolutions of issues associated with livestock grazing, mineral development, wildlife, travel management, and recreation.

Travel Management Designations

Travel management designations of Open, Limited, or Closed are applied to motorized use and are largely consistent with national guidelines. The concepts of closed and limited in the Upper Deschutes FEIS/PRMP varies from the initial focus of travel

management because the guidance applies to all motorized use (except where specified) rather than applying to OHV use only:

- *Open* - Areas where significant resource or social conflict issues are not expected.
- *Limited* - Areas where motorized public access is managed to meet specific recreation and resource management objectives.
- *Closed* - Areas where motorized vehicle use should be restricted to protect resources, ensure visitor safety, reduce conflicts, or provide exclusive non-motorized recreation opportunities.

Recreation Emphasis

The FEIS/PRMP applies a specific recreational emphasis to each area. The recreation emphasis designations include:

- *Multiple use shared facilities* – combines motorized and non-motorized uses on the same roads and trails in the same area.
- *Multiple use separate facilities* – combines uses in the same area, but provides some level of separate facilities.
- *Non-motorized recreation emphasis* – emphasizes shared use in the same area, with motorized use limited to roads and trails provided for non-motorized use.
- *Non-motorized recreation exclusive* – closes the area to motorized use (except for administrative use and necessary recreation access) and emphasizes non-motorized trail use except on county roads or state highways.
- *Non-recreation emphasis* – these include tracts of BLM-administered lands that are managed for research purposes (i.e., RNAs) or as administrative sites or leases.
- *Roads only emphasis* – areas where any trail development is unlikely to occur within the planning cycle due to location, size, or fragmented nature of the public land parcel.

Ecosystem Health and Diversity

Vegetation

The alternatives use two major management emphases, Current Distribution and Historic Range of Variability. Alternative 7 modifies the Historic Range of Variability concept slightly and is labeled Enhancing Healthy and Diverse Landscapes.

“**Current Distribution**” reflects a management emphasis on shaping vegetative communities to rehabilitate specific areas or to achieve specific resource objectives in priority areas. There would be no emphasis on treating landscapes to expand plant communities toward a “pre-European settlement” range, although pre-European settlement conditions may be replicated in some areas. In reality, some high priority areas would overlap and be treated similarly to the strategy employed under “historic” management. However, treatment units and habitat patch sizes would generally be smaller and overall project treatment acres would be fewer than under the historic emphasis.

“**Historic Range of Variability**” reflects more emphasis on a return toward “pre-European” conditions and distribution. While this does not mean replicating exact conditions from a selected date in the past, this approach manages the ecosystem for a combination of patterns, patch sizes, species distribution, and seral stages that are consistent with expected fire frequency, intensity, and distribution. Historic condition and distribution is a management strategy derived from the assumption that ecosystems were in equilibrium and functioning as they were intended based on evolutionary adaptations that occurred under the influence of natural geologic, climatic, and ecological processes.

“**Enhancing Healthy and Diverse Landscapes**” adds additional clarification to how the concept of historic range of variability would be applied given the human influences that have occurred over the last 150 years within the planning area and their continued influence. The potential for restoration to historic conditions will be influenced by these and other factors as well. While the primary focus on restoration of healthy watershed and hydrologic function, conservation and restoration of source habitats for wildlife species, and emphasis on restoration of old growth structure and natural disturbance regimes would continue as described under the Historic Range, this emphasis would clarify how those social and economic factors would be considered when making final decisions about the appropriateness of restoration and other management activities.

Wildlife

The approach this plan has taken is to generally follow a system of single- and multi-species management emphases to enable the resource management plan and environmental impact statement to: address both single- and multi-species needs depending on objectives; identify broad-scale patterns of habitat change that affect multiple species in a similar manner; address the needs of many species efficiently; and describe the management of some individual species of high public interest.

Wildlife Emphasis Levels

Alternatives 2 - 7 in general have common objectives for management of wildlife that are included in one of three management emphasis levels – Primary, Secondary, or General.

Definitions and guidelines for the different wildlife emphasis area are as follows:

Primary wildlife emphasis - wildlife is one of the most important management considerations for an area. Areas allocated to primary emphasis are intended to benefit wildlife and retain high use by wildlife in the area.

Secondary wildlife emphasis - wildlife is one of several resource management programs that are of focus in an area, and typically receive a slightly lower, but still significant, level of management consideration. Areas allocated to a secondary emphasis are intended to support wildlife and maintain a moderate amount of use.

General wildlife emphasis - wildlife typically receives a lower level of consideration to most other resource management programs. These areas, as a whole, should still contribute to species occurrence and distribution, but typically are not the focus of intense management efforts for wildlife. Generally, guidelines are tied to minimum legal requirements identified in the sections on “common” guidance (Standards for Rangeland Health, BLM Special Status Species Policy (6840), and the Threatened and Endangered Species Act).

Source Habitats

The source habitat management concepts used in this plan have been adapted from the strategy developed in the Interior Columbia Basin Ecosystem Management Project (ICBEMP) for managing terrestrial source habitats. This ties management approaches taken in this Resource Management Plan to the scientific information developed as a part of the ICBEMP, which was a larger-scale assessment and management strategy that encompassed the entire Columbia Basin, including the FEIS/PRMP planning area.

Source habitats are those characteristics of vegetation that contribute to a specie’s population maintenance or growth over time and within an area. These source habitats are described using the dominant vegetation cover type and the structural stage, various

combinations of which make up the source habitats for the terrestrial families (group of species that share source habitats) and provide the range of vegetation conditions required by these species for cover, food, reproduction, and other needs.

Habitat Effectiveness

It is possible that areas containing abundant source habitats may not support persistent populations of some species because of disturbance and fragmentation primarily associated with motorized travel routes. For instance, source habitats may contribute to positive or stationary population growth, but motorized travel routes effect may override the habitat effect, thereby creating conditions that, over time, reduce wildlife populations (Wisdom et al., 2000, p. 5).

Habitats contribute more to wildlife populations depending on the condition and this can be displayed in terms of “habitat effectiveness.” Habitat effectiveness can be influenced by a number of factors, such as plant species composition, structural condition (habitat quality), patch size, location (arrangement across the landscape), and the amount of disturbance. For this planning effort, the analysis focuses on the effectiveness of habitat that contributes to species of focus (Species that meet at least one of five criteria, see Chapter 2). The approach used in this plan is to identify source habitats by general vegetation types and to display habitat effectiveness by alternative as it relates to the amount of influence of motor vehicles and un-fragmented patch size.

Urban and Rural Areas

The Upper Deschutes Resource Management Plan alternatives are shaped significantly by the dynamics of the communities that inhabit this area. As described in other parts of this document, those dynamics are driven in large part by the changing rural and urban character of the population and economies. This is reflected both in terms of resource demands and individual group or community preferences and expectations.

The concepts of Urban and Rural as utilized in this plan are different from common usage in that much of what we refer to as “urban” is not densely populated and contains significant amounts of open space. These concepts are meant to capture the relationship of BLM-administered lands to the expected changes in population growth and development in different parts of the planning area –including some differences in management emphasis that relate to the conflicts, demands, and the preferences and expectations of the social and economic needs of the communities within the planning area. This distinction depends on the changing conditions of the surrounding land uses rather than a strict geographic or demographic interpretation of current conditions. Therefore, there is no hard-and-fast line dividing these areas.

BLM-administered lands within the planning area considered “urban” have one of the following characteristics:

- Adjacent to urban or rural population centers – including high density non-conforming rural land uses, residential or resort zoning, or small acreage development; or
- In areas where non-public land ownership tends to be highly fragmented, and flanked or surrounded by BLM-administered lands.

Those lands considered “rural” in the planning area generally have the following characteristics:

- Adjacent to large blocks of agricultural zones and uses;
- The public ownership may be fragmented, often without public access, but usually

surrounded by low density development associated with rural agricultural rather than rural residential or small acreage developments;

- The public lands are in generally large contiguous blocks adjacent to national forests and grasslands or other BLM-administered lands to the east.

Public Land Classifications

BLM-administered lands are classified into four categories that establish guidance about their suitability for long-term ownership as follows:

- Zone 1 – lands with national or statewide significance (for wildlife, recreation, scenic or other values). Zone 1 lands are classified for retention in public ownership and are areas where increasing public land holdings may be considered.
- Zone 2 – lands with high resource values. Zone 2 lands are identified for retention but may be exchanged for lands with higher resource values.
- Zone 3 – lands that generally do not provide substantial resource, public, or tribal benefits; that may not be cost effective for BLM to manage; or that would represent a greater public benefit in other ownership. Zone 3 lands are potentially suitable for transfer, sale or other disposal, including lands identified as having potential land use benefits for local community expansion.
- Community Expansion (CE). Lands zoned CE are retained in public ownership until needed for specific community purposes.

Overview of the Alternatives

There are seven alternatives considered in detail. This section provides a brief overview of each of those alternatives. Alternatives considered in detail include one “No Action/No Change” Alternative (Alternative 1), and six “action” alternatives (Alternatives 2-7) that would reflect various levels of change from the existing Brothers-La Pine Resource Management Plan direction. All alternatives would include Continuing Management Direction that is not being revised (see Chapter 1 and Appendix C). Some of the issues identified early in this planning process were resolved using one approach in the “action alternatives”. These are identified under the category “Management Direction Common to Alternatives 2 - 7” in the Alternatives Considered in Detail section. This management guidance represents areas where there was little controversy over the best way to resolve the issue. One example of this approach is the common management direction for the “action” alternatives for archeological resources considered “at risk.” The common approach categorizes “at risk” resources, prioritizes those resources for future actions, and limits uses that have a high likelihood of significantly impacting the integrity of those resources. These components are not included in this overview.

The “action” alternatives strive to develop a balance of uses, therefore it is difficult to briefly characterize them. Generally, none of the alternatives eliminates any one type of use entirely. In many cases, if a use is more limited in one geographic area in a particular alternative, there may be an increase in that use elsewhere in the planning area in the same alternative to achieve that balance of different mixes of uses present in each alternative.

Alternative 1 – No Action/No Change

This section describes the current management direction provided by the existing Resource Management Plans (RMPs) and decisions applicable to the Upper Deschutes Planning Area. This alternative includes existing direction for the Millican OHV area from the Millican OHV Environmental Assessment and Millican litigation settlement agreement.

Alternative 2

This alternative would have the least amount of overall change from current management. In general, this alternative would continue a mix of uses throughout the planning area, resolving conflicts on a case-by-case basis rather than by separating uses, or applying specific conflict and demand thresholds. Alternative 2 emphasizes shared trail use (motorized and non-motorized) throughout most of the planning area.

Alternative 3

This alternative increases emphasis on reducing conflicts between human uses and wildlife habitat management objectives and separating recreational uses. It relies on the use of Areas of Critical Environmental Concern (ACECs) as a management strategy to meet wildlife and other management objectives. This alternative places a greater focus managing for primary or secondary wildlife habitats with a primary or secondary emphasis across the planning area than does Alternative 2.

Alternative 4

Alternative 4 combines the approaches used in Alternatives 2 and 3, and includes more emphasis on providing for recreation opportunities (more than Alternative 3, but less than 2) in areas and during seasons when the demand is greatest. This alternative would also place a greater emphasis than Alternative 2 on reducing conflict between land uses and other users or adjacent residents. Recreation uses would be more separated than Alternative 2, but less than Alternative 3, and there would be an emphasis on certain types of recreation over others within geographic subdivisions. ACECs would provide special management objectives that emphasize ecosystem and wildlife habitat management, but these areas would generally be smaller or less frequently distributed across the planning area than in Alternative 3.

Alternative 5

Alternative 5 would utilize the “urban/rural” concept discussed earlier. The emphasis would be to focus reduced or lower conflict activities and higher quality wildlife habitat within the “urban” areas (generally includes most of Deschutes and Jefferson counties). There would be limited use of ACEC direction to protect resources and more reliance on broad-scale conservation approaches across the planning area.

Alternative 6

Alternative 6 takes an approach that, in contrast to Alternative 5, emphasizes the future of effective wildlife habitats outside of the areas most likely to be affected by residential and urban development. This alternative puts less emphasis on reducing conflicts between land uses, recreational users, and residents in the “urban” areas adjacent to residential areas than does Alternative 5. More emphasis is on reduced conflicts between wildlife management objectives and human activities away from residential development areas in the “rural” areas (generally includes most of Crook County).

Alternative 7 (Preferred Alternative)

Alternative 7 is based in part on areas of consensus developed with our Issue Team and includes changes made in response to comments made on Alternative 7 of the Draft Environmental Impact Statement. Although specific direction changed in response to those comments, the overall emphasis of the Alternative 7 remains as described here. Alternative 7 takes an approach that combines various features of the previous alternatives. It places more emphasis on primary and secondary wildlife habitat emphasis areas in the southeast or “rural” portion of the planning area due to the greatest potential concentrations of species needs. However, for the North Millican area, Alternative 7 does modify habitat effectiveness goals and place limitations on winter motorized use in order to balance wildlife habitat and recreation use needs. It places more emphasis on primary and secondary wildlife habitat emphasis areas in the southeast or “rural” portion of the planning area in the area of the greatest potential concentrations of species needs, but also allows the opportunity for increased amounts of year-round motorized use in much of that area. It emphasizes more separation of recreational uses than shared uses. Alternative 7 would modify the “conflict and demand” threshold criteria used in “Common to Alternatives 2 - 7” to determine areas available for continued livestock grazing use over the next 10 to 20 years.

Identification of the Preferred Alternative

The Preferred Alternative was based, in part, on consensus recommendations from the Deschutes Provincial Advisory Committee, and because it would, better than other alternatives considered, balance uses and allow for a flexible management response to changing conditions.

Consensus Recommendations from the Deschutes Provincial Advisory Committee

The Deschutes Provincial Advisory Committee (PAC) chartered a working group that helped to formulate its recommendations about the Preferred Alternative. The Preferred Alternative reflects a number of areas of consensus from the collaborative process used to develop this plan. These include:

- *Ecosystem Health and Diversity* – a broad scale conservation approach to management of Old-Growth Juniper and a modified boundary on expanded Peck’s Milkvetch ACEC.
- *Transportation* – designation of transportation corridors north and south of the City of Redmond.
- *Land Uses* – grazing matrix developed to evaluate and categorize allotments for present and future decisions about continuing livestock grazing within those allotments and areas available for salable mineral extraction (tied to expanded Peck’s Milkvetch ACEC boundary location); and areas allocated for military uses.
- *Recreation* – motorized use Limited to designated roads and trails.
- *Land Ownership* – lands designated for future community expansion (CE), conceptual agreements on configuration of Z-1 and Z-2 lands.

The PAC provided a consensus recommendation on most of the changes made between the Draft and Final Environmental Impact Statements.

Rationale for the Preferred Alternative

The Preferred Alternative builds on areas of consensus identified during the planning effort and reflects a balance of uses that would meet the needs of local communities as well as national mandates for management of public lands. It provides a mix of management emphases that recognizes the individual identities and social and economic values of the local communities. It will meet long term military training needs and provides a flexible framework for managing livestock grazing that responds to changing conflicts and demands.

The Preferred Alternative also provides reasonable mitigation for urban and rural residents from impacts of land use activities while still providing for traditional uses like livestock grazing and salable mineral material site development. It provides for separated motorized and non-motorized recreation uses that offer opportunities in close proximity to urban areas as well as larger blocks of public lands for uses farther from urban centers. The Preferred Alternative would integrate recreation and wildlife management objectives throughout the planning area and includes elements that support current scientific approaches to ecosystem management and an aggressive approach to management of hazardous fuels in the urban interface. It would establish a proactive framework for managing present and future at-risk significant archeological resources and includes an approach for determining future areas available for firearm use that would be integrated with local governments, reduce risk to neighbors, and provide for firearm uses that would complement desired recreation experiences.

Comparison of Alternatives

The environmental impacts of the alternatives can be compared by examining the key components described below and displayed in numerical contrast in Table ES-1 Comparison of Alternatives. The description of Alternatives Considered in Detail includes a brief summary of some of the expected outcomes of each of the Alternatives, and Chapter 4, Environmental Consequences includes a detailed description of the probable outcomes.

Ecosystem Health and Diversity

- **Vegetation Condition**- Acres of general vegetation priority treatment and acres of specific priority treatments, including: Verified High Restoration Priority Sub basins, aquatic strongholds, canyons, priority old juniper old growth, ACECs, ponderosa pine, sage grouse, and mule deer winter ranges.
- **Fire/Fuels Management** – Acres of estimate annual prescribed fire treatments outside of the wildland urban interface and mechanical treatments including the wildland urban interface area.
- **Wildlife Emphasis Levels** – Acres and percent of land managed for Primary, Secondary, or General.
- **Special Management Areas** - Acres in Areas of Critical Environmental Concern.

Land Uses

- **Livestock Grazing**– Acres available for livestock grazing, total AUMs and numbers of allotments available under each alternative. Acres are also displayed by the categories described in the grazing matrix: Open, Available or not as a Reserve Forage Allotment, or allotments that would be Closed.
- **Minerals** – Acres and percent of planning area that would be available for locatable, leasable, or mineral sales entry.
- **Forest and Range Products** – Cubic and board foot volume available per acre.
- **Military Uses** – Acres and percent of planning area available for long term military use.

Recreation

- **Recreation Emphasis** - Acres and percent of planning area by specific recreation emphasis designations.
- **Travel Management Designation**– acres and percent of planning area by specific travel management including type of use and season of use.

Land Ownership

- **Land Ownership** – acres and percent of planning area by specific land tenure/zoning classifications, Retention (Z-1), Retention with option to exchange (Z-2), Disposal (Z-3), or Community Expansion.

Transportation and Utilities

- **Regional Transportation**- length of corridors identified for future rights-of-way between Redmond and Bend.

- ***Local Transportation*** – miles of collector roads or local roads. Roads designated as collector roads form the backbone of the BLM transportation system. Local roads are available for future designation as either a part of the permanent transportation system or to be closed.

Public Health and Safety

- ***Firearm Discharge*** – acres and percent of planning to be closed to all firearm discharge or firearm discharge unless legally hunting.

Table ES-1 Comparison of Alternatives¹

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Ecosystem Health & Diversity							
Vegetation							
Vegetation Management Emphasis	No change from Brothers / La Pine	Current Distribution	Historic Range of Variability	Current Distribution	Current Distribution	Historic Range of Variability	Enhancing Healthy & Diverse Landscapes
Vegetation Priority Treatment Areas (acres):				Same as 2	Same as 2	Same as 3	Same as 3
WUI	General guidance to improve land health, emphasis on juniper and shrub control and salvage of lodgepole pine	83,727	83,727				
Verified High Priority Restoration		0	45,098				
Lower Crooked River Sub-basin		40,746	40,746				
Upper Crooked River Sub-basin		29,722	29,722				
Aquatic Stronghold Restoration		5,883	0				
Canyon Treatment		12,317	56,611				
Priority Old-Growth Juniper Restoration		323	0				
Peck's Milkvetch Treatment Area		5,766	5,766				
Ponderosa Pine		94,412	127,276				
Priority Sage Grouse Restoration		15,684	0				
Mule Deer Winter Range Restoration		168,310	230,250				
Total vegetation treatment (15 years)²	71,000						
Fire/Fuels Management							
Prescribed fire treatments (estimated acres / year)				Same as 2	Same as 2	Same as 3	Same as 3
Years 1 – 5	2,580	1,265	3,838				
Years 6 – 15	2,580	5,253	9,210				
Mechanical treatment (includes WUI) (estimated acres / year)				Same as 2	Same as 2	Same as 3	Same as 3
Years 1 – 5	2,150	11,385	11,512				
Years 6 – 15	2,150	5,253	6,140				
Wildlife							
Crucial Winter Range (deer and antelope)	47,343	None designated	None designated	None designated	None designated	None designated	None designated
Source Habitats	None identified	Current Distribution	Historic Range of Variability	Current Distribution	Current Distribution	Historic Range of Variability	Historic Range of Variability
Wildlife Emphasis (acres / %)							
Primary ³	160,000 / 40%	99,000 / 25%	256,000 / 63%	159,000 / 39%	117,000 / 29%	218,000 / 54%	244,000 / 61%
Secondary	55,600 / 14%	22,000 / 5%	57,000 / 14%	31,000 / 8%	134,000 / 33%	29,000 / 7%	33,000 / 8%
General	187,000 / 46%	281,000 / 70%	91,000 / 23%	214,000 / 53%	153,000 / 38%	156,000 / 39%	126,000 / 31%

Issue Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Special Management Areas							
Designated ACECs (acres)							
Wagon Roads	75	875	875	875	875	875	875
Badlands (included within WSA)	16,684	16,684	16,684	16,684	16,684	16,684	16,684
Horse Ridge (also an RNA and ISA)	609	609	609	609	609	609	609
Powell Butte (also an RNA)	510	510	510	510	510	510	510
Peck's Milkvetch	4,073	4,073	4,073	4,073	11,144	11,144	10,325
Alfalfa Market Road	0	0	4,200	4,200	0	0	0
Juniper Woodlands	0	0	31,011	6,756	0	0	0
Sage Grouse	0	0	0	16,257	0	0	0
Smith Rock	0	0	2,119	0	0	2,119	0
Tumalo Canal ⁴	0	1,050	0	0	1,050	1,050	1,050
Lower Crooked River (included within WSR)	2,592	0	0	0	0	0	0
Total ACEC Acres	24,543	23,801	60,081	49,964	30,872	32,991	30,053
Land Uses							
Livestock Grazing							
Acres available for livestock grazing ⁵	389,900	389,348	389,348	348,682	228,625	347,890	268,815
AUMs / Number of Allotments ⁶							
Available (Open)	25,840 / 124	25,779 / 124	25,779 / 124	23,545 / 86	13,261 / 61	24,375 / 115	20,785 / 84
Open or available as RFA ⁷	0	0	0	0	0	0	472 ⁹ / 1
Available as RFA	0	0	0	0	0	0	1,967 ¹⁰ / 10
RFA or not available ⁸	0	0	0	0	0	0	1,834 ¹¹ / 23
Not available (Closed)	0	69 / 0	69 / 0	2,345 / 38	12,530 / 63	1,508 / 9	721 ¹² / 6
Minerals							
Land available for mineral sales (acres / %)	403,910 / 100%	349,199 / 86%	347,080 / 85%	335,772 / 83%	311,799 / 77%	347,080 / 85%	349,199 / 86%
Land available for Locatable Mineral Entry	403,910 / 100%	Same as 1	Same as 1	Same as 1	Same as 1	Same as 1	Same as 1
Land available for Mineral Leasing	374,365 / 93%	Same as 1	Same as 1	Same as 1	Same as 1	Same as 1	Same as 1
Forest Products							
Volume (estimated ccf / mbf per year)	500 ccf / 250 mbf	1200 ccf / 600 mbf	1500 ccf / 750 mbf	Same as 2	Same as 2	Same as 3	Same as 3
Military							
Land available for military use (acres / %)							
Core Area	29,744 / 7%	36,397 / 9%	21,207 / 5%	26,194 / 6%	29,760 / 7%	29,741 / 8%	28,818 / 7%
Extended Area	0	0	0	0	0	25,924 / 6%	15,167 / 4%
Total Area	29,744 / 7%	36,397 / 9%	21,207 / 5%	26,194 / 6%	29,760 / 7%	55,665 / 14%	43,985 / 11%

Issue Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Recreation Emphasis							
Recreation Emphasis (acres / %)	316,000 / 78%	312,000 / 77%	157,000 / 39%	235,000 / 58%	211,000 / 52%	166,000 / 41%	147,167 / 36%
Multiple use / shared facilities	0	0	29,000 / 7%	0	41,000 / 10%	31,000 / 8%	27,235 / 7%
Multiple use / separate facilities	42 / <1%	58,500 / 14%	65,500 / 16%	122,000 / 32%	86,000 / 21%	69,000 / 17%	84,339 / 21%
Non-motorized emphasis	11,000 / 3%	26,000 / 6%	82,000 / 20%	28,000 / 7%	55,000 / 13%	84,000 / 21%	92,057 / 23%
Non-motorized exclusive	76,000 / 19%	5,270 / 2%	68,000 / 17%	16,000 / 4%	10,000 / 2%	51,000 / 13%	53,144 / 13%
Roads only, low recreation emphasis	0	1,500 / 1%	1,400 / <1%	1,500 / <1%	400 / <1%	1,500 / <1%	1500 / <1%
Non-recreation emphasis (acres / %)							
Travel Management Designation¹³							
Designated Open (acres / %)	153,600 / 38%	0	0	0	0	0	0
Motorized use limited to existing roads and trails	95,000 / 24%	0	0	0	0	0	0
Designated Closed ¹⁴	6,550 / 2%	20,370 / 5%	75,960 / 19%	23,473 / 6%	48,016 / 12%	78,429 / 20%	93,776 / 23%
Motorized use limited to designated roads or designated roads and trails	80,500 / 20%	371,000 / 92%	213,234 / 53%	309,703 / 77%	247,185 / 61%	205,454 / 51%	268,712 / 67%
Motorized use limited to designated roads or designated roads and trails – seasonally	47,000 / 12% (15,400 / 4% closed depending on snow depth)	11,500 / 3%	89,133 / 22% (19,846 / 5% closed depending on snow depth)	65,094 / 16%	107,801 / 27%	113,928 / 28%	60,521 / 15%
Motorized use limited to existing roads and trails seasonally	4,600 / 1%	0	0	0	0	0	0
Land Ownership							
Z-1 (Retain) (acres / %)	206,201 / 51%	359,690 / 89%	357,598 / 89%	327,335 / 81%	322,693 / 80%	344,406 / 86%	323,931 / 80%
Z-2 (Retain, may exchange) (acres / %)	175,523 / 43%	23,082 / 6%	34,829 / 8%	57,488 / 14% ¹⁶	66,713 / 17%	39,693 / 10% ¹⁹	62,753 / 15%
Z-3 (Dispose) (acres / %)	15,422 / 4%	12,639 / 3%	7,456 / 2%	9,669 / 3%	7,821 / 2%	13,789 / 3%	15,186 / 4%
Community Expansion (acres / %)	5,617 / 1%	7,592 / 2%	3,121 / 1% ¹⁵	8,512 / 2% ¹⁷	5,776 / 1% ¹⁸	5,115 / 1% ²⁰	3,612 / 1% ²¹
Transportation and Utilities							
BLM Road designation (miles):	302	Same as 1	104	Same as 3	Same as 3	Same as 3	Same as 3
Collector	2,562	Same as 1	2,787	2,808	2,801	Same as 3	Same as 3
Local			Corridor btwn Redmond + Bend; no Quarry Ave link to Hwy 97	Combination of Alts 2 & 3	Combination of Alts 2 & 3	Combination of Alts 2 & 3	Combination of Alts 2 & 3
Regional transportation corridor	No corridor	Corridor btwn Redmond + Quarry Ave					

Issue Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Public Health and Safety							
Closed to all firearms discharge ² (acres / %)	708 / <1%	4,657 / <1%	8,269 / 2%	8,296 / 2%	8,296 / 2%	6,289 / 2%	11,486 / 3%
Closed to firearms discharge unless legally hunting	3,646 / 1%	20,749 / 5%	121,398 / 30%	22,301 / 6%	110,075 / 27%	58,739 / 14%	83,121 / 21%

¹ All numbers in this table are approximate. All percentages are in relation to the approximately 404,000 acres of BLM-administered public land within the planning area, not in relation to all land in the planning area.

² Due to overlap of priority treatment areas, these categories will not add up to the total vegetation treatment acres.

³ Alternative 1 does not use the concepts of “primary, secondary, or general” for wildlife habitat emphasis. An area of B/LP RMP acres with management direction similar to that under the new “primary” designation was used to compare the alternatives.

⁴ Alternatives 3 and 4 include the Tumalo Canal ACEC in the proposed Juniper Woodlands ACEC.

⁵ The available acres are not 100% of the acres in the planning area, several thousand acres remain unavailable to grazing in all alternatives.

⁶ Allotments were counted as Open if any portion of the allotment remains Open in the alternative. Number of allotments counts La Pine unallotted as one.

⁷ RFA = reserve forage allotment (see text for description)

⁸ The “RFA or not available” column is a management discretion category.

⁹ This figure assumes the permittees voluntarily relinquish their permits. If they don’t, the figures would drop to 0 and “open” would increase correspondingly.

¹⁰ *ibid*

¹¹ *ibid*

¹² *ibid*

¹³ Acres do not reflect portions of the North Millican area or portions of trail systems that may be seasonally restricted, while other portions or areas of North Millican that would be open year-round.

¹⁴ Areas designated closed are closed to vehicles off of roads. In some closed areas, motorized use on roads is allowed.

¹⁵ Designation applies only to parks, green belts, and open spaces.

¹⁶ Exchanges must be for equitable habitat and recreational values; exchanges between large blocks near Bend/Redmond are for the purpose of blocking up or creating corridors between large blocks.

¹⁷ Proposed projects would include interconnecting open spaces.

¹⁸ *ibid*.

¹⁹ Exchanges must be for equitable habitat and recreational values; exchanges between large blocks near Bend/Redmond are for the purpose of blocking up or creating corridors between large blocks.

²⁰ Designation applies only to parks, green belts, open spaces, open recreation spaces, and open community infrastructure needs.

²¹ Designation applies only to parks, green belts, open spaces, open recreation spaces, and open community infrastructure needs for the sawtooth area on Highway 97.

²² 290 of these acres include seasonal raptor closures.

Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
ADT	Average Daily Traffic
AMP	Allotment Management Plan
AMS	Analysis of the Management Situation
ARPA	Archaeological Resources Protection Act
ASCO	Archaeological Society of Central Oregon
ASQ	Allowable Sale Quantity
ATV	All Terrain Vehicle
AUM	Animal Unit Month
BA	Biological Assessment
BECA	Bald Eagle Consideration Area
BEMA	Bald Eagle Management Area
BLM	Bureau of Land Management
BMP	Best Management Practices
BOR	Bureau of Reclamation
BS	Bureau Sensitive
CAA	Clean Air Act
CAFO	Confined Animal Feeding Operations
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COSSA	Central Oregon Shooting Sports Association
CRNG	Crooked River National Grassland
CRR	Crooked River Ranch
CWA	Clean Water Act
DBH	Diameter at Breast Height
DEIS	Draft Environmental Impact Statement
DEQ	Department of Environmental Quality (Oregon)
DNF	Deschutes National Forest
DOI	Department of Interior
DOGAMI	Department of Geology and Mineral Industries (Oregon)
DR	Decision Record
DRMP	Draft Resource Management Plan
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
FCRPA	Federal Cave Resources Protection Act
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
FR	Federal Register
FS	Forest Service
FY	Fiscal Year
GIS	Geographic Information System
HCA	Habitat Conservation Areas
HCP	Habitat Conservation Plan
HMP	Habitat Management Plan
IBLA	Interior Board of Land Appeals
ICBEMP	Interior Columbia Basin Ecosystem Management Project
IDT	Interdisciplinary Team
IMP	Interim Management Policy for Lands Under Wilderness Review
ISA	Instant Study Area
IWM	Integrated Weed Management Program
KLA	Known Linkage Area
LAU	Lynx Analysis Units
LWCF	Land and Water Conservation Fund
MBF	Thousand Board Feet
MMBF	Million Board Feet

MO	Management Objectives
MOU	Memorandum of Understanding
NF	National Forest
NHPA	National Historic Preservation Act
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NSS	National Speleological Society
OAR	Oregon Administrative Rules
ODA	Oregon Department of Agriculture
ODEQ	Oregon Department of Environmental Quality
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
OEF	Oregon Eagle Foundation
OHV	Off-Highway Vehicle
OMD	Oregon Military Department
ONHP	Oregon Natural Heritage Program
OPRD	Oregon State Parks and Recreation Department
ORV	Off-Road Vehicle or Outstandingly Remarkable Value
OSU	Oregon State University
PFC	Proper Functioning Condition
PNW	Pacific Northwest
R&PP Act	Recreation and Public Purpose Act
RCA	Riparian Conservation Area
RD	Ranger District
RMO	Riparian Management Objective
RMP	Resource Management Plan
RNA	Research Natural Area
ROD	Record of Decision
ROW	Right of Way
RV	Recreational Vehicle
SCORP	Statewide Comprehensive Outdoor Recreation Plan
S&Gs	Standards and Guidelines
SHPO	State Historical Preservation Office
SOC	Species of Concern
SR	State Route
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
SUP	Special Use Permit
SVIM	Soil-Vegetation Inventory Method
SWCD	Soil and Water Conservation District
TCP	Traditional Cultural Property
T&E	Threatened and Endangered
TGA	Taylor Grazing Act of 1934
TNC	The Nature Conservancy
TMDL	Total Maximum Daily Load
UDRMP	Upper Deschutes Resource Management Plan
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VQO	Visual Quality Objectives
VRM	Visual Resource Management
WQMP	Water Quality Management Plan (State)
WQRP	Water Quality Restoration Plan (Federal)
WSR	Wild and Scenic River
WSA	Wilderness Study Area
WSRA	Wild and Scenic Rivers Act
WUI	Wildland Urban Interface

Glossary

Abiotic - pertaining to the non-living parts of an ecosystem, such as soil, rock, air, and water.

Access - the ability of public land visitors to reach the areas they wish to visit.

Access Statement - a legal right to cross the land granted to the public by a landowner.

ACEC (Area of Critical Environmental Concern) - a type of special land use designation specified within the Federal Land Policy and Management Act (FLPMA) used to protect areas with important resource values in need of special management.

Acre - a unit of area used in land measurement, equal to 43,560 square feet. There are 640 acres in one square mile.

Advisory Council on Historic Preservation - established by the National Historic Preservation Act of 1966 to play a key role in the evaluation, nomination, and treatment of National Register properties.

Allotment - a specific portion of public land allocated for livestock grazing, typically with identifiable or fenced boundaries and permitted for a specified number of livestock.

AMP (Allotment Management Plan) - a BLM document that directs the management of livestock grazing on a specific area of public land.

AMS (Analysis of the Management Situation) - Step 4 of the BLM's land use planning project; a comprehensive documentation of the present conditions of the resources, current management guidance, and opportunities for change.

Andesite - volcanic rock with a silicon dioxide (SiO₂) composition between 52 and 63 percent by weight. Its color is gray to black and it erupts at temperatures between 900 and 1100 °C.

Appropriate (Fire) Management Response - specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Area of Traditional Cultural Significance - for the purposes of this plan, those locations used by Indian people to maintain their values, beliefs, and cultural identity, including, but not limited to, traditional plant collecting areas, fishing stations, or places for practicing traditional religious beliefs.

Ash - volcanic material consisting of rock, volcanic glass, and mineral fragments less than 2 mm in diameter.

ASQ (Allowable Sale Quantity) - the quantity of timber that may be sold from an area covered by a forest management plan during a time period specified by the plan. ASQ is usually expressed as an average annual quantity.

AUM (Animal Unit Month) - the amount of forage required to sustain one cow and calf for one month.

Basalt - a dark-colored volcanic rock with less than 52% silicon dioxide by weight. Its temperature when erupting ranges from 1100 to 1250°C. Basalt is less viscous (more fluid) than andesite and rhyolite and is capable of flowing several tens of kilometers.

Biodiversity (Biological Diversity) - the variety and variability among living organisms and the ecological complexes in which they occur (ICBEMP, 2000).

Biological Control Agent - The use of nonnative agents, including invertebrate parasites and predators (usually insects, mites, and nematodes) and plant pathogens, to reduce populations of nonnative, invasive plants.

Biomass - dry weight of organic matter in plants and animals in an ecosystem, both above and below ground.

Biotic - living.

BLM (Bureau of Land Management) - government agency with the mandate to manage Federal lands under its jurisdiction for multiple uses.

BMPs (Best Management Practices) - a set of practices which, when applied during implementation of management actions, ensures that negative impacts to natural resources are minimized. BMPs are applied based on site-specific evaluations and represent the most effective and practical means to achieve management goals for a given site.

Board Foot - the amount of wood contained in an unfinished board one inch thick, 12

inches long, and 12 inches wide, commonly abbreviated BF; MBF = one thousand board feet; MMBF = one million board feet.

Broad Scale - a large, regional area, such as a river basin, and typically a multi-state area.

Broadcast Burning - burning natural fuels as they are, with no piling or windrowing.

Bureau Assessment Species (AS) - Plant and vertebrate species, which are not presently eligible for official federal or state status but are of concern in Oregon or Washington and may, at a minimum, need protection or mitigation in BLM activities. These species will be considered as a level of special status species separate from Bureau sensitive species. Clearances will be done for all assessment species subject to limitations in funding or positions. Impacts to the population and to the species as a whole will be determined and recommendations for the species will be considered on a case-by-case basis through the environmental analysis process in balance with other resource considerations. These species may not necessarily affect all proposed actions, but where possible, steps should be taken to protect the species.

Bureau Sensitive Species - species eligible as federally listed or candidate status, state listed or candidate (plant) status, or on List 1 in the Oregon Natural Heritage Database, or otherwise approved for this category by the State Director.

Bureau Tracking Species (TS) - Species for which more information is needed to determine status within the state or which no longer need active management. Districts are encouraged to collect occurrence data to enable an early warning for species which may become threatened or endangered in the future. Until status of such species changes to federal or state listed, candidate or assessment species, "tracking species" will not be considered as special status species for management purposes.

Candidate Species - any species included in the Federal Register Notice of Review that are being considered for listing as threatened or endangered by the U.S. Fish and Wildlife Service.

Cell - unique ecosystem type used by the Oregon Natural Heritage Plan to inventory, classify, and evaluate natural areas. Cells contain one or more ecosystem elements, which are assemblages of integrated organisms plus the environment supporting them.

Cinder - a frothy form of basalt formed by expanding gases during an eruption.

Cinder Cone - a cone-shaped volcano created by the accumulation of cinders around a vent, formed as an individual volcano or in groups on the flanks of larger volcanoes.

Cinnabar - mercury sulfide, an ore of mercury.

Climax - the culminating stage of plant succession for a given environment; the vegetation conceived as having reached a highly stable condition.

Collaboration - a formalized process of identifying and involving interactive participants in different parts of the analysis process. Collaboration is expected to result in some level of informed consent by all participants concerning the issues and range of alternatives. For the purposes of this plan, that is intended to include members both exempt from and subject to the Federal Advisory Committee Act.

Common use area - a generally broad geographic area from which BLM can make disposals of mineral materials to many persons, with only negligible surface disturbance. The use is dispersed throughout the area.

Communication Site - (1) a hilltop or favorable signal receiving and transmitting location where a collection of facilities are sited; (2) a facility consisting of a small building and tower, used for transmission or reception of radio, television, telephone or other electronic signals.

Community Pit - a relatively small, defined area from which BLM can make disposals of mineral materials to many persons. The surface disturbance is usually extensive in the confined area.

Conglomerate - a clastic sedimentary rock composed of rounded to sub-angular stones (larger than 2 mm in diameter) cemented in a matrix of sand or silt.

Connectivity (of habitats) - the linkage of similar but spatially separated vegetative stands (such as mature forests) by patches, corridors, or "stepping stones" of like vegetation across the landscape; also, the degree to which similar landscapes are so linked (PNW GTR-328, 1994).

Consultation - formal and informal consultation as defined by laws such as the National

Historic Preservation and Endangered Species Acts. Also, any input formally requested for analysis purposes from any internal or external source.

Cooperators – tribal, local, state, or federal agencies with special expertise related to plan issues or that have legal jurisdiction within the planning area.

Critical Habitat -BLM Manual 6840 defines Critical Habitat (CH) as an area designated as such and listed in 50 CFR Parts 17 and 226 and is any air, land, or water area (exclusive of those existing manmade structures or settlements which are not necessary to the survival an recovery of a listed species) and constituent elements thereof, the loss of which would appreciably decrease the likelihood of the survival and recovery of a listed species or a distinct segment of its population. The constituent elements of Critical Habitat include, but are not limited to: physical structure and topography, biota, climate, human activity, and the quality and chemical content of land, water, and air. Critical Habitat may represent any portion of the present habitat of a listed species and may include additional areas for reasonable population expansion. The federal definition of critical habitat is: (i) the specific areas within the geographic area occupied by the species, at the time it is listed ...on which are found those physical and biological features (a) essential to the conservation of the species and (b) which may require special management considerations or protections; (ii) specific areas outside of the geographical area occupied by the species, at the time it is listed ... upon a determination of the Secretary that such areas are essential for the conservation of the species; and (iii) Except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area which can be occupied by the threatened or endangered species (ESA Section 3).

Cultural Resource - material or non-material aspects of human culture which are significant to living cultures, including groups maintaining and preserving their traditions, and academic researchers such as anthropologists and historians.

Disturbance - any event which alters the structure, composition, or function of terrestrial or aquatic habitats (PNW GTR-328, 1994).

EA (Environmental Assessment) - one type of document prepared by Federal agencies in compliance with the National Environmental Policy Act (NEPA) that portrays the environmental consequences of proposed Federal actions that are not expected to have significant impacts on the human environment.

Ecological Integrity - in general, refers to the degree to which all ecological components and their interactions are represented and functioning; the quality of being complete; a sense of wholeness. Areas of high integrity would represent areas where ecological function and processes are better represented and functioning than areas rated as low integrity (ICBEMP, 2000).

Ecology - the science of the inter-relationships between organisms and their environment; from the Greek *Oikos* meaning “house” or “place to live.”

Ecosystem - a spatially explicit, relatively homogeneous unit of the earth that includes all interacting organisms and components of the abiotic environment within its boundaries. An ecosystem can be of any size; e.g., a log, pond, field, forest, or the earth’s biosphere.

Ecosystem Health - a condition where the parts and functions of an ecosystem are sustained over time. The system’s capacity for self-repair is maintained such that goals for uses, values, and services of the ecosystem are met. Also includes forest health, rangeland health, and aquatic system health.

Ecosystem Management - the use of a “whole-landscape” approach to achieve multiple-use management of public lands by blending the needs of people and environmental values in such a way that these lands represent diverse, healthy, productive, and sustainable ecosystems.

Ecotone - a boundary or zone of transition between adjacent communities or environments, such as the boundary between a forest and a meadow or the boundary of a clear cut next to a mature forest stand. Species present in an ecotone are intermixed subsets of the adjacent communities.

EIS (Environmental Impact Statement) - one type of document prepared by Federal agencies in compliance with the National Environmental Policy Act (NEPA) that portrays the environmental consequences of proposed major Federal actions that are expected to

have significant impacts on the human environment (see EA, above).

EMS (Existing Management Situation) - a component of the Analysis of the Management Situation; a description of the existing management direction governing resource management programs of a planning area.

Endangered Species - any species defined under the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range. Listings are published in the Federal Register.

Endemic Species - plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality (ICBEMP, 2000).

Ephemeral Stream - a stream, or reach of a stream, that flows only in direct response to precipitation. It receives no continuous supply from melting snow or other source, and its channel is above the water table at all times.

Erosion (Accelerated) - erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, e.g., fire that exposes the surface.

ESI (Ecological Site Inventory) - the basic inventory of present and potential vegetation of BLM rangelands. Ecological sites are differentiated on the basis of soil type and kind, proportion, or amount of plant species.

Extirpated - having become extinct in a specific area while the species as a whole continues to exist elsewhere.

Fine Scale - a single landscape, such as a watershed or sub watershed.

Fire Cycle - the average time between fires in a given area or a given plant community.

Fire Frequency - the return interval of fire.

Fire Preparedness - activities that lead to a safe, efficient, and cost effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

Fire Regime - the frequency, predictability, intensity, seasonality, and extent characteristics of fires in an ecosystem.

Flood Plain - A relatively flat area that borders a stream that is composed of deposited materials from the stream and is subject to periodic flooding unless protected artificially.

FLPMA (Federal Land Policy and Management Act of 1976) - a law mandating that the Bureau of Land Management manage lands under its jurisdiction for multiple uses.

FMP (Fire Management Plan) - a strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans and prevention plans.

Forestland - land stocked with at least 10 percent live trees or land formerly having such tree cover and not currently developed for non-forest use.

Functional-At-Risk - riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Game Species - wildlife species hunted for sport.

Ground Water - water filling all the unblocked pores of the material below the water table.

Habitat Fragmentation - the splitting or isolating of patches of similar habitat, typically forest cover (but could also apply to grass fields, shrub patches, and other habitats). Habitat can be fragmented from natural conditions, such as thin or variable soils, or from management activities or development such as clear-cut logging, agriculture, or residential development.

Historic Condition - as used in this text, the condition of lands and ecosystems prior to European settlement. In central Oregon, European settlement occurred during the period from approximately 1850s to 1900. An approximation of these conditions is drawn from written and photographic accounts from the period and is used to determine the range of variability for plant and animal species across a landscape (Ochoco NF Viable Ecosystems Management Guide, 1994).

Historic Range of Variability (HRV) - the typical fluctuations of processes or functions, and the typical proportions of ecosystem elements in an area over a period of time when

the ecosystem was not significantly affected by European settlement and management. HRV is the amplitude or minimum-maximum ranges of “natural” conditions.

ICBEMP (Interior Columbia Basin Ecosystem Management Project) - a project conducted during the 1990s and early 2000s examining the effects (on a large, regional scale) of past and present land use activities on the Interior Columbia River Basin ecosystem and a small part of the Great Basin ecosystem.

Ignimbrite - a volcanic rock formed by the welding together of tuff material from an explosive volcanic eruption.

Information Sharing - a process designed to keep everyone informed about what is happening in the planning effort. This includes but is not limited to published material on a variety of media, and management and public briefings and/or presentations.

Initial (Fire) Attack - an aggressive fire suppression action consistent with fire fighter and public safety and values to be protected.

Interdisciplinary - involving more than one discipline or resource management program.

Intermittent Stream - a stream, or reach of a stream, that flows for prolonged periods only when it receives groundwater discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Issue - an opportunity, conflict, or problem about use or management of public land resources. The resolution of issues is the basis for preparing the resource management plan.

Landscape - all the natural features which distinguish one part of the land from another. A spatially heterogeneous area with repeating patterns, similar climate, and landform, and the associated disturbance regimes.

Lava tube - a cave formed by the draining of molten lava from a channel covered by a surficial crust.

Leasable Minerals – minerals that may be leased to private interests by the Federal government and includes oil, gas, geothermal, coal, and sodium compounds.

Leave Tree – a tree left standing in an area where thinning or harvest has occurred.

Lek – an area used by sage grouse for courtship and mating.

Litter - the dead remains of plants, usually lying on the soil surface.

Loam - a soil textural class composed of roughly equal amounts of sand, silt, and clay.

Locatable Minerals - minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

Management Concern - procedures or land-use allocations that do not constitute issues but, through the RMP/EIS preparation process, are recognized as needing to be modified or needing decisions made regarding management direction.

Management Opportunities - a component of the analysis of the management situation ;actions or management directions that could be taken to resolve issues or management concerns.

Mesic - pertaining to sites or habitats characterized by intermediate moisture conditions, i.e., neither decidedly wet nor dry.

MFP (Management Framework Plan) – an older generation of land use plans developed by the Bureau of Land Management. This generation of planning has been replaced by the Resource Management Plan (RMP).

Microbiotic Crusts - lichens, mosses, green algae, fungi, cyanobacteria, and bacteria growing on or just below the surface of soils.

Mineral Estate - refers to the ownership of minerals at or beneath the surface of the land.

Minor Wildlife Emphasis - designated areas where wildlife typically receives a lower level of consideration to most other resource management programs. Generally, guidelines are tied to minimum legal requirements identified in the sections on “common” guidance (Standards for Rangeland Health, BLM Special Status Species Policy (6840)), and the Threatened and Endangered Species Act.

Mitigating Measures - modifications of actions that (a) avoid impacts by not taking a certain action or parts of an action, (b) minimize impacts by limiting the degree or magnitude of the action and its implementation, (c) rectify impacts by repairing,

rehabilitating, or restoring the affected environment, (d) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action, or (e) compensate for impacts by replacing or providing substitute resources or environments. **Monitoring and Evaluation** - the collection and analysis of data to evaluate the progress and effectiveness of on-the-ground actions in meeting resource management goals and objectives.

Multiple Use – the management of public land and its resources to best meet various present and future needs of the American people. This means coordinated management of resources and uses.

NEPA (National Environmental Policy Act of 1969) - a law requiring all Federal agencies to evaluate the impacts of proposed major Federal actions with respect to their significance on the human environment.

Non-functional - riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc.

Non-game Species - wildlife species which are not hunted for sport.

Noxious Weed - a plant specified by law as being especially undesirable, troublesome, and difficult to control.

NRHP (National Register of Historic Places) - established by Congress with the passage of the National Historic Preservation Act of 1966, an ever increasing, formal list of sites that are culturally significant according to specific criteria.

NWR (National Wildlife Refuge) - an area administered by the U.S. Fish and Wildlife Service for the purpose of managing certain fish or wildlife species.

Obsidian - a volcanic glass with a bulk composition equivalent to that of rhyolite except that obsidian has lower water content.

Occupancy - The taking, maintaining, or holding possession of a camp or residence on public land either by personal presence or leaving property at the location.

OHV (Off-Highway Vehicle) - unless otherwise stated, this generally refers to Class I all-terrain vehicles, Class II full width four-wheel drive vehicles, and Class III motorcycles.

Old-growth - old forest often containing several canopy layers, variety in tree sizes and species, decadent old trees, standing and down dead woody material (PNW GTR-328, 1994).

Overstory - the upper canopy layer; the plants below comprise the understory.

Patch - an area of vegetation with homogeneous composition and structure.

Perennial Stream - a stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

Perlite - a volcanic glass with an equivalent composition to that of rhyolite but with a higher water content than obsidian.

PFC (Proper Functioning Condition) - adequate vegetation, land form, or large woody debris present to dissipate stream or wave energy, filter sediment and capture bedload, improve flood water retention, develop root masses that stabilize stream banks, islands and shorelines, develop channel characteristics to provide habitat for aquatic species, support greater biodiversity, reduce erosion, and improve water quality.

Planning Area – the area containing all BLM-administered lands that would be managed under the UDRMP.

Plant Association - the distinctive combination of trees, shrubs, grasses, and herbs occurring in a theoretical terminal or climax community or a series of communities (PNW GTR-328, 1994).

Potential Natural Vegetation - an historical term originally defined by A.W. Kuchler as the stable vegetation community which could occupy a site under current climatic conditions without further influence by humans. Often used interchangeably with Potential Natural Community.

Potential Plant Community - one of several plant communities that may become established on an ecological site under the present environmental conditions, either with or without interference by humans.

Preferred Alternative or Plan - the alternative plan in the Draft EIS that the agency has initially selected that best fulfills the agency's statutory mission and responsibilities and

offers the most acceptable resolution of the planning issues and management concerns.

Prescribed Fire - the introduction of fire to an area under regulated conditions for specific management purposes (usually vegetation manipulation).

Prescribed Natural Fire – a fire caused by lightning for which minimal to no suppression action is taken if it is under pre-determined conditions and within acceptable parameters. Prescribed natural fire is used to accomplish certain resource objectives.

Pressure Ridge - a ridge formed during inflation of a basalt flow, often having one or more prominent tension cracks along the ridge axis.

Primary Wildlife Emphasis - designates that wildlife is one of the most important management considerations for an area. Areas allocated to primary emphasis are intended to benefit wildlife and retain high wildlife use by applying specific guidelines (see Chapter 2).

Public Land - any land or interest in land owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

Public Participation - a process designed to inform and involve all people and organizations not otherwise involved in the planning effort through Consultation, Cooperation, or Collaboration. Involvement includes opportunities to comment on preliminary and draft published materials, general public information or comment meetings, and periodic receipt of update material.

Pumice - a frothy, lightweight form of volcanic glass formed from expanding gasses in a rhyolite magma.

R&PP Act (Recreation and Public Purposes Act) - an act passed by Congress which allows state and local governments and nonprofit organizations to lease and eventually acquire title to public lands for recreational or community expansion and other public purposes. The act was passed in recognition of the strong public need for a nationwide system of parks and historic preservation areas along with lands for other public purposes such as schools, fire houses, law enforcement facilities, municipal facilities, land fills, hospitals, and fairgrounds.

RAP (Resource Area Profile) - a component of the analysis of the management situations; a description of the current condition, amount, location, use and demands of the natural resources in a planning area.

Resilience – 1) the ability of a system to respond to disturbances. Resiliency is one of the properties that enable the system to persist in many different states or successional stages; 2) in human communities, refers to the ability of a community to respond to externally induced changes such as larger economic forces.

Resource Area - the “on-the-ground” management unit of the Bureau of Land Management comprised of BLM-administered land within a specific geographic area.

Restoration - as used in this text, vegetative treatments used to modify an ecosystem and designed to return plant and animal communities *toward* a condition and level of functioning that existed prior to human disturbance or influence.

Rhyolite - a light colored volcanic rock with a silicon dioxide composition greater than 68% by weight. It commonly exhibits flow banding and its temperature when erupting ranges from 700 and 850°C.

Right-of-Way - a grant that authorizes the use of public lands for specified purposes, such as pipelines, roads, telephone lines, electric lines, and reservoirs.

Riparian - a form of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.”

RMP (Resource Management Plan) - current generation of land use plans developed by the BLM under the Federal Land Policy and Management Act. Replaces the older generation Management Framework Plans. Provides long-term (up to 20 years) direction for the management of a particular area of land, usually corresponding to a BLM resource area, and its resources.

RNA (Research Natural Area) - an area of significant scientific interest that is designated to protect its resource values for scientific research and study. Under current BLM policy, these areas must meet the relevance and importance criteria of ACECs and are designated as ACECs.

Sacred site - means any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site (Executive Order 13007, 1996:1).

Salable Minerals - high volume, low value mineral resources including common varieties of rock, clay, decorative stone, sand, gravel, and cinder.

Savanna - In this FEIS/RMP, non-forest (usually shrub-steppe) land where juniper occurs as widely scattered trees at less than 10% crown cover.

Scenic Corridor - an area of special aesthetic values, including scenic vistas, unusual geologic or vegetative features, or other natural elements.

Scenic River - a river or section of a river that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads.

Scoping - the process of identifying the range of consideration, issues, management concerns, preliminary alternatives, and other components of an environmental impact statement or land-use planning document. It involves both internal and external or public involvement.

Secondary Wildlife Emphasis - a designation where wildlife is one of several resource management programs that are of focus in an area, and typically receive a slightly lower, but still significant, level of management consideration. Areas allocated to a secondary emphasis are intended to support wildlife and maintain a moderate amount of use, as outlined in Chapter 2.

Seral Stage - the rated departure of a plant community from a described potential natural community (PNC) for a specific ecological site. *Low-seral* stage is an existing plant community which is defined as 0-25% comparability to the defined PNC; *Mid-seral* stage is an existing plant community which has 26-50% comparability to the PNC; *Late seral* stage is 51-75% comparable to the PNC; PNC is an existing plant community with 76-100% comparability to the defined PNC.

Shield Volcano - a gentle-sloped volcano built primarily by successive low-viscosity basalt flows. Has a shield-shaped profile.

Silviculture - the practice of manipulating the establishment, composition, structure, growth, and rate of succession of forests to accomplish specific objectives.

Site Condition - the level of condition, or degree of function, used to express the current condition of a site in contrast to site potential.

Site Potential - a measure of resource availability based on interactions among soils, climate, hydrology, and vegetation. Site potential represents the highest ecological status an area can attain given no political, social, or economic constraints. It defines the capability of an area, its potential, and how it functions (ICBEMP, 2000).

Snag - a standing dead tree, usually larger than five feet tall and six inches in diameter at breast height. Snags are important as habitat for a variety of wildlife species and their prey.

Special Status Species - a plant or animal species falling into any one of the following categories: Federally listed threatened or endangered species, species proposed for Federal listing as threatened or endangered, candidate species for Federal listing, State listed species, Bureau sensitive species, Bureau assessment species (see separate definition for each).

Species Diversity - the number, different kinds of, and relative abundances of species present in a given area.

Stand - a contiguous group of similar plants. For forest use, a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.

State Listed Species - any plant or animal species listed by the State of Oregon as

threatened or endangered within the state under ORS 496.004, ORS 498.026, or ORS 564.040.

Structure - the physical organization and arrangement of vegetation; the size and arrangement (both vertical and horizontal) of vegetation.

Sub-basin Review - an interagency, collaborative consideration of resources, resource management issues, and management recommendations for one or more subbasins or watershed drainages approximately 800,000 to 1,000,000 acres in size.

Succession - the gradual supplanting of one community of plants by another. The sequence of communities is called a *sere*, or *seral stage*. A process of changes in structure and composition of plant and animal communities over time. Conditions of the prior plant community or successional stage create conditions that are favorable for establishment of the next stage. The different stages in succession are often referred to as seral stages.

Sustainability – 1) meeting the needs of the present without compromising the abilities of future generations to meet their needs; emphasizing and maintaining the underlying ecological processes that ensure long-term productivity of goods, services, and values without impairing productivity of the land; 2) in commodity production, refers to the yield of a natural resource that can be produced continually at a given intensity of management (ICBEMP, 2000).

Sustained Yield - maintenance of an annual or regular periodic output of a renewable resource from public land consistent with the principles of multiple use. Also: The yield that a forest can produce continuously at a given intensity of management. Sustained yield management implies continuous production, so planned as to achieve, at the earliest practical time, a balance between increment and cutting.

Tephra - a descriptive term for materials ejected from volcanoes including ash, pumice, cinders, and volcanic bombs.

Terrestrial - pertaining to the land.

Thermal Cover - cover used by animals to protect them against the weather.

Threatened Species - any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Listings are published in the Federal Register.

Timberland - forestland capable of continuously producing 20 cubic feet or more per acre of industrial wood.

TNC (The Nature Conservancy) - a private national organization dedicated to the preservation of biological diversity.

Tuff - a volcanic rock formed by the welding together of ash and rock fragments from an explosive volcanic eruption.

Underburn - burning by a surface fire, usually under a tree canopy.

Understory - collectively, those plants that are beneath the overstory. See overstory.

Upland - the portion of the landscape above the valley floor or stream.

USDI (U.S. Department of Interior) - government department which oversees the Bureau of Land Management and many other agencies.

USFWS (U.S. Fish and Wildlife Service) - government agency responsible for managing fish and wildlife and their habitats.

Vegetative Composition - the plant species present in a plant community.

Vent - an opening at the Earth's surface through which volcanic materials are erupted.

Viability - in general, the ability of a population of a plant or animal species to persist for some specified time into the future. For planning purposes, a viable population is one that has the estimated numbers and distribution of reproductive individuals to ensure that its continued existence will be well distributed in the planning area (ICBEMP, 2000).

Visual Resources - the aesthetic qualities of the landscape. This is determined by assessing the scenic quality of a site, the sensitivity of people to changes in the landscape, and the visibility of the landscape from major viewing routes and key observation points.

Watershed - the region draining into a river, river system, or body of water. A fifth-field hydrologic unit code of the U.S. Geologic Survey (USGS) comprising 50,000 to 100,000 acres.

Weed - a plant considered undesirable, unattractive, or troublesome, usually introduced and growing without intentional cultivation. See also Noxious Weed.

WFSA (Wildland Fire Situation Analysis) - a decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria.

Wild River - a river or section of a river that is free of impoundments and generally inaccessible except by trail, with watersheds and shorelines essentially primitive and waters unpolluted.

Wilderness - an area that is essentially natural in character that has been designated by Congressional action in order to preserve that naturalness.

Wildfire - any unwanted wildland fire.

Wildland Fire - any non-structure fire, other than prescribed fire, that occurs in the wildland.

Woodland - a plant community in which, in contrast to a typical forest, the trees are often small or short-boled relative to their crown width or height. Collectively, the trees form an open canopy with the intervening area occupied by lower vegetation, commonly grass or shrub.

WSA (Wilderness Study Area) - public land under the jurisdiction of the Bureau of Land Management which has been studied for wilderness character and is currently in an interim management status awaiting official wilderness designation or release from WSA status by Congress.

Xeric - pertaining to sites or habitats characterized by decidedly dry conditions.

Zones - BLM-administered lands are classified into four categories that establish guidance about their suitability for long-term ownership as follows:

- Zone 1 – lands with national or statewide significance (for wildlife, recreation, scenic or other values). Zone 1 lands are identified for retention in public ownership and are areas where management emphasis is being placed on increasing public land holdings through donations, exchange or sale.
- Zone 2 – lands with high resource values. Zone 2 lands are identified for retention or possible exchange for lands with higher resource values or transfer through the Recreation and Public Purposes Act.
- Zone 3 – lands that generally do not provide substantial resource, public, or tribal benefits; that many not be cost effective for BLM to manage; or that would represent a greater public benefit in other ownership. Zone 3 lands are potentially suitable for transfer, sale or other disposal, including lands identified as having potential land use benefits for local community expansion
- Community Expansion (CE). Lands zoned CE are retained in public ownership until needed for specific community purposes.

Chapter 1: Purpose and Need



Introduction

The Upper Deschutes Proposed Resource Management Plan and the Final Environmental Impact Statement (FEIS/PRMP) is presented in three volumes:

- Volume 1 – Signature Page, Abstract, Executive Summary and Table of Contents, Abbreviations and Acronyms, Glossary, and Chapters 1-3.
- Volume 2 – Chapters 4-5, Summary of Public Comment, References, and Index
- Volume 3 – Proposed Resource Management Plan (PRMP) and Appendices to the FEIS/PRMP

Chapter 1 of the FEIS includes a description of the Purpose and Need for Action and the issues that drove the development of the Alternatives. Chapter 2 describes the range of alternatives considered in detail and identifies the BLM Preferred Alternative, Alternative 7. Chapter 3 describes the affected environment. Chapter 4 analyzes the environmental consequences of the Alternatives. Chapter 5 describes the planning process and collaboration involved in the creation of this document. The Summary of Public Comment includes public comments received on the Draft EIS and the BLM response to those comments.

The PRMP (Proposed Resource Management Plan) includes a detailed description of the management goals, vision, objectives, allocations and allowable uses, and guidelines for Alternative 7, the Preferred Alternative. The appendices include supplemental material referenced in the FEIS/PRMP.

Changes between Draft and Final

The Draft Upper Deschutes Resource Management Plan and Environmental Impact Statement (DEIS) was published in October 2003. The public had 90 days, until January 15, 2004, to submit comments on the Draft EIS. Those comments were considered in making changes to the DEIS which are included in this FEIS. Changes made to the DEIS include the following:

- Changes to the Draft EIS Preferred Alternative.
- Clarifications, corrections, supplemental analysis or additional information was added to various sections of the FEIS/PRMP and some of the maps published with the DEIS. Eight new or modified maps were created and are included with this document.
- Alternative 1 for Fire and Fuels has been properly identified as continued management direction.
- Appendix A of the DEIS included a description of the management direction (goals, objectives, allocations, allowable uses, and guidelines for future activities) for all alternatives considered in the DEIS. Detailed direction for alternatives other than the Preferred Alternative was not republished with the FEIS. Appendix A of the FEIS describes the Decisions to be Made, a section first published in the Analysis of the Management Situation.
- The Proposed Management Plan (PRMP) includes detailed management direction for the Preferred Alternative (Alternative 7) identified in the FEIS.

Changes to the Preferred Alternative

Based on the comments received from the public and from internal comments, the following summarizes the substantive changes made to Alternative 7, the Preferred Alternative, between the Draft and Final EIS. These are arranged by topic (in bold), categorized by the type of direction that was modified (in italics), and followed by bulleted descriptions of the change made to the alternative. BLM Responses to Public Comments includes, among other information, more detailed descriptions of changes made in response to public comments.

Ecosystem Health and Diversity

- *Modify “Historic Range of Variability” (HRV) Vegetation Management Theme*
 - Focus on restoration and function
 - More emphasis on social/economic
 - Recognize limitations in urban areas
 - Focus more on “Historic Range of Variability” in less urban areas
 - New vegetation management “theme” in FEIS Alternative 7
- *Objectives, rationale, and guidelines for tribal traditional uses of vegetation have been added*
- *Expanded Environmental Consequences analysis*

Land Uses

- *Increase BLM flexibility to resolve conflicts between livestock grazing and other uses/resources*
 - Modify the Grazing Matrix to allow option for allotment closure or creation of Reserve Forage Allotment for more allotments in the “low demand” category.
- *Drop rockhounding collection limits.*
 - This issue is now being considered at the national level.
- *Add decorative stone guidance*
- *Modify Military Use Areas*
 - Drop Steamboat Rock Area
 - Change from “rotation” to “extended” training areas
 - Enhanced restoration/baseline component
 - Technical corrections to objectives & guidelines to clarify the allowable uses within the training area that were carried forward as Continued Management Direction

Recreation & Wildlife

- *More motorized opportunities*
 - La Pine seasonal closure to motorized uses modified
 - Modify prohibition on motorized use in the Tumalo Canal area of Cline Buttes not included in the Tumalo Canals Area of Critical Environmental Concern (ACEC)
 - Motorized trail links allowed in Non-Motorized Recreation Emphasis areas
 - Added consideration of limited Off-Highway Vehicle (OHV) development opportunity north of Prineville Reservoir
- *Modify North Millican Recreation Area direction*
 - Reduce habitat effectiveness guidelines based on open motorized travel routes (from 70 percent to 50-60 percent)
 - Include emphasis for integrated/concurrent improvement of other habitat variables when current seasonal closure changed
 - Winter trail use in portions (not all) of area
 - Seasonal restrictions would apply to motorized and bicycle use

- *Modify direction for shared/separated non-motorized uses*
 - Strengthen the overall emphasis on shared use, allow flexibility to separate uses by trail design (mainly equestrian and bicycle)
- *Modify non-motorized trail density guidelines*
 - Change from numerical to descriptive guidelines based on trail function
- *Modify language for “minor” wildlife emphasis*
 - Change from “minor” to “general” wildlife emphasis to better reflect the general emphasis that wildlife will receive in those designated areas

Transportation and Utilities

- *The PRMP/FEIS more clearly describes lands available for transportation needs, considers administrative access needs, and contains improved transportation maps*

Land Ownership

- *Modify Land Ownership Classifications*
 - Reduce amount of Community Expansion lands based on lack of demonstrated need adjacent to the City of Redmond
 - Reduce lands classified as Z-2 (BLM-administered lands to be retained but may be exchanged for lands of equal or greater resource value) from 83,812 to 62,753 acres
 - Increase lands classified Z-1 (BLM-administered lands to be retained) from 310,272 to 323,775 acres.
 - Increase lands classified Z-3 (BLM-administered lands suitable for Disposal) from 5707 to 15,185 acres.

Public Health and Safety

- *Modify criteria for firearm discharge closures*
 - Clarify when firearm discharge closures are appropriate
 - Add adjacent land management exception to closures
 - Add exception for other government agents
 - Include consideration of developed facilities

Social, Economic

- *The FEIS includes added data and analysis on the effects to the local economy from OHV use, rock hounding, mining, and Special Recreation Permits.*
- *The FEIS also includes more information on Crook County and the importance of public lands to its population.*

Purpose and Need

The purpose of the Upper Deschutes Resource Management Plan (FEIS/PRMP) is to guide the use, protection, and enhancement of resources on public land in the planning area. This resource management plan would replace the 1989 Brothers/La Pine Resource Management Plan (B/LP RMP) for the western half of the plan's area. This plan would also revise a portion of the Two Rivers Resource Management Plan (TRRMP) by changing the boundaries of the planning areas in order to address issues common to the adjacent FEIS/PRMP Planning Area.

Following The Interior Columbia Basin Strategy (BLM, 2003), the goals of the FEIS/PRMP are to:

- Sustain and where necessary, practical, and within available funding, restore the health of forests, rangeland, aquatic, and riparian ecosystems.
- Provide a predictable, sustained flow of economic benefits within the capabilities of the ecosystems.
- Contribute to the recovery and de-listing of threatened and endangered species and 303(d) listed waters.
- Provide diverse recreational and educational opportunities within the capabilities of the ecosystem.
- Manage natural resources consistent with treaty and trust responsibilities to American Indian Tribes.

The combination of changed circumstances and new information has driven the need to revise the 1989 B/LP RMP. The 1989 plan did not anticipate land management issues related to the rapidly growing population in Bend, Redmond, Prineville, and nearby communities. In addition, new information about the planning area has been made available.

Changed Circumstances

Population growth, changes in technology, a court ruling, and new guidance for some special status species have changed the circumstances within the planning area.

The population in Central Oregon has increased and is continuing to increase more rapidly than state and national averages. The planning area contains the fastest growing county in the State of Oregon, and this growth is due to influx of new residents. The population of Deschutes County is projected to double between 1990 and 2010 with population reaching 151,230 (Portland State University Center for Population and Census). In July 2003 Portland State University estimated the population of Deschutes County at 130,500. Bend, immediately adjacent to the planning area, and Redmond, within the planning area, are two of the fastest growing cities in Oregon. This dramatic population growth exceeds what the BLM expected when it prepared the 1989 B/LP RMP. The increase in local and regional population has meant an increased demand for use of public land to support community needs. Local communities have requested new and expanded transportation corridors, mineral materials sites, and sewage treatment sites. Private land development frequently involves increased population density that leads to different and increased uses on public lands and requests for road access and utility rights-of-way across BLM-administered lands. Both local and regional population increases are reflected in increasing numbers of people engaging in a variety of recreational activities on BLM-administered lands. The increased population growth has also correlated with increased demand for recreation leases and for commercial recreation activities on BLM-administered lands.

Changes in communication technology have resulted in requests to develop sites on BLM-administered land.

With increased amount and diversity of use on and adjacent to public lands, there is a lack of recreation services and infrastructure, conflicts between visitors, resource impacts, and a shortage of some recreational opportunities.

Litigation involving the Millican Valley Off-Highway Vehicle (OHV) area resulted in a decision to consider the cumulative effects of OHV use in the Millican Valley area in an EIS. The FEIS/PRMP examines alternatives for managing OHV use throughout the area, including Millican Valley. The FEIS will analyze the direct, indirect, and cumulative effects of the alternatives on all appropriate resources.

Other changes include concerns about the status of certain plant and animal populations. Since the Brothers/La Pine RMP the State of Oregon has listed Peck's milkvetch and the pumice grapefern (both found within the planning area) as "Threatened" (OAR 603-073-0070). Additionally, the decline of sage grouse populations has triggered a BLM state-wide strategy with new guidance to prevent listing of the species under the Endangered Species Act.

New Information

New information has become available since BLM prepared the B/LP RMP. Much of the new information was generated by the Interior Columbia Basin Ecosystem Management Project (ICBEMP), a broad-scale, Basin-level analysis, in "An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins (Quigley and Arbelbide, 1997)." New information from this and other sources includes:

1. Recent Biological Opinions issued under the Endangered Species Act indicating additional guidance is needed to protect some plants and animals in portions of the planning area (Prineville District BLM records);
2. Downward trends in ecological integrity, based on the condition of soil and vegetation, and impacts from land uses including recreation, grazing, agriculture and urban or rural development (Quigley and Arbelbide, 1997);
3. An increase in fragmentation and loss of plant and animal species diversity or genetic resilience due to loss of connectivity within and between blocks of upland forest, shrub-steppe, and riparian habitats (Quigley and Arbelbide, 1997);
4. Noxious weed encroachment and the expansion of juniper and other woody species beyond their historic range of variability (HRV) (Quigley and Arbelbide, 1997);
5. New requirements for plant and animal species habitat (Quigley and Arbelbide, 1997);
6. The importance of late and old seral plant species, historic disturbance factors such as fire on the landscape, and sustainable use and development on public lands (Quigley and Arbelbide, 1997); and
7. Identification of high priority areas and special emphasis watersheds for restoration activities within the Upper Deschutes basin (Quigley and Arbelbide, 1997).

Proposed Decisions

The Proposed FEIS/PRMP incorporates both proposed **land use planning decisions** and more specific proposed project level or **implementation decisions**. Land use planning decisions are those which consist of desired outcomes (goals, standards and objectives) and the allowable uses (including allocations, levels of use, and restrictions on use) and management actions necessary to achieve those outcomes. Land use plan decisions

provide management direction and guide future actions. Implementation decisions generally constitute BLM’s final approval allowing on-the-ground actions to proceed. These types of decisions require site-specific planning and NEPA analysis. Land use planning decisions can be distinguished from implementation decisions in that, although the former are themselves final and effective upon adoption, they normally require additional decision steps (such as permit approvals) before activities having on-the-ground impacts can be carried out.

Geographic and Jurisdictional Scope

The planning area covers 935,226 acres of public and private land in two separate blocks in Central Oregon (see Map 1A). The BLM has jurisdiction over more than 404,000 acres, or 43 percent of the planning area. The northern part of the planning area is in Crook, Deschutes, and Jefferson counties, and is located between Sisters on the west, Lake Billy Chinook on the north, Prineville Reservoir and State Highway 27 on the east, and Pine Mountain and Bend on the south. The southern part of the planning area, also called the La Pine area, encompasses La Pine in southern Deschutes and northern Klamath counties. About 232,000 acres, or 57 percent of BLM-administered land in the planning area is in Deschutes county. About 145,000 acres or 36 percent of BLM-administered land in the planning area is in Crook County. About 3,700 acres or just less than 1 percent of BLM-administered land in the planning area is in Jefferson County. About 24,000 acres or 6 percent of BLM-administered land in the planning area is in Klamath County. Table 1-1 displays landownership in the planning area by county.

The boundaries of the planning area include the public lands most affected by the rapid growth in the areas of Bend, Sisters, Redmond, Prineville, and La Pine. The FEIS/PRMP includes about 38 percent of the total area considered in the B/LP RMP. Map 1 shows the planning area for the FEIS/PRMP. The eastern portion of the B/LP planning area is not being addressed in the FEIS/PRMP and nearly 15,000 acres of public land in the Two Rivers RMP is now included in the FEIS/PRMP (i.e., the area adjacent to the Crooked and Deschutes Rivers in Jefferson County). When completed, the FEIS/PRMP will provide management direction for this area.

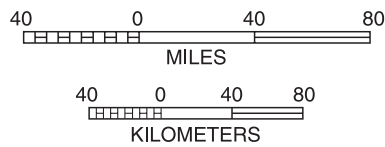
Table 1-1. Land ownership/administration in the Upper Deschutes Planning Area by county (acres).

	Crook	Deschutes	Jefferson	Klamath	Total
Bureau of Land Management	144,987	231,986	3,694	23,619	404,286
Forest Service and Grassland	0	38	2,059	0	2,097
Other US Agencies	7,813	0	0	0	7,813
State (estimated)	1,353	11,359	0	0	12,712
County	80	10,275	Included as Private	Included as Private	10,355
Private	285,120	181,576	9,141	22,126	497,963
Total	439,353	435,234	14,894	45,745	935,226

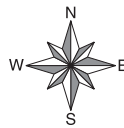


LEGEND

- Upper Deschutes Planning Area
- BLM State Office
- BLM District Office
- BLM Resource Area Office
- County Boundary



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
PRINEVILLE DISTRICT
2004



**Proposed Upper Deschutes
Resource Management Plan and
Final Environmental Impact Statement**

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FEIS Map 1A: General Location

A slightly different boundary was identified during public scoping meetings for the Analysis of the Management Situation (AMS). After comments from cooperating government agencies, the planning boundary was extended to the east to include the area south of Prineville Reservoir. This includes all of the Reservoir area considered under the cooperative Prineville Reservoir Master Plan (Oregon State Parks and Recreation/Bureau of Reclamation), as well as some of the important deer winter range in that area. The planning area contains lands owned and/or managed by private parties, counties, and the state, and public lands administered by federal agencies, including the BLM. The decisions to be made in this RMP, however, will be made only for the BLM-administered lands.

Issues

This planning process is driven by issues resulting from rapid population growth and the increasing demands on public lands associated with that growth. An “issue” is a topic of controversy, dispute, or concern over resource management or land uses within the planning area boundary that cannot be adequately resolved using management direction provided by the existing RMP. Issues must also be well-defined and within the ability of the agency to address within a reasonable range of alternatives. Issues were identified using the results of the initial “scoping” conducted between 1991 and 1996 for the “Central Oregon Urban Interface Plan Amendment”, comments submitted on the Analysis of the Management Situation (published in October 2001), and new information brought to the attention of the planning team.

As a result of this process, the planning team identified the issues to be resolved. The issues have been organized under nine issue categories: Ecosystem Health and Diversity, Land Uses, Visual Resources, Recreation, Transportation and Utilities, Land Ownership, Public Health and Safety, Archaeological Resources, and Social and Economic Values. These issues are summarized below.

Ecosystem Health and Diversity

Vegetation

Human influences, such as fire exclusion, livestock grazing, road construction, and logging practices; and natural events, such as drought and climate changes, have led to changes in the range, composition, density, and dominance of native plant species. For example, in some areas, native bunchgrasses are declining in density and extent while cheatgrass and rabbitbrush are increasing in abundance and dominance. Noxious weeds are increasing in the planning area and replacing native species in some areas. Weed infestations decrease bio-diversity and degrade public land values for almost every resource and human activity. An increase in density and extent of woody species (trees and shrubs) and non-native annual grasses is presenting a serious fire hazard in the Wildland Urban Interface (WUI).

Fire suppression (and other management practices that contribute to fire exclusion) is perhaps the human factor most responsible for widespread changes in native ecosystems. The dominant shrub-steppe, juniper woodland, and lodgepole pine communities within the planning area have evolved over time in response to periodic fire disturbance. Many acres within the planning area have missed at least two disturbance cycles. Without the natural ecological role of fire to periodically shape and renew landscapes, plant communities and habitats; ecosystems and watersheds have become severely altered and are no longer functioning properly in many areas.

Increased private land development and ground-disturbing uses on public lands are also fragmenting and reducing the integrity of shrub-steppe and old-growth juniper landscapes in Central Oregon. These human activities are raising concerns about wildlife habitat, biological diversity, scenic values, and ultimately ecosystem sustainability and health. Loss of private natural landscapes to urban development makes the remaining natural public lands even more ecologically and aesthetically significant.

While the loss of old-growth juniper woodland is a primary concern, the spread of young juniper resulting from absence of fire across much of the shrub-steppe habitat in the planning area is also of concern. The B/LP RMP recognized the role of fire in the ecosystem and established risk classes that provided guidance for fire suppression and fuels treatments. However, the B/LP RMP did not fully consider the health of special status species, declining key habitats, riparian areas, old-growth ecosystems, and high natural fuel levels.

Wildlife

BLM-administered public lands, adjacent ranch and agricultural land, and nearby National Forests contribute important habitat that supports healthy and diverse wildlife populations. Some examples of wildlife that use these habitats include mountain lions, coyotes, mule deer, elk, pronghorn, bats, squirrels, rabbits, golden eagles, warblers, woodpeckers, waterfowl, sage grouse and chukar partridge.

Several BLM Special Status Species¹ occupy the planning area. The bald eagle is the only species listed federally under the Endangered Species Act and the Columbia and Oregon spotted frogs are the only two candidate species that occur in the planning area. In addition, the area provides habitat for 14 Bureau Sensitive, four Bureau Assessment and 26 Bureau Tracking species. These species use a variety of habitats and some use different types of habitats seasonally for breeding, nesting, foraging, cover, and other needs.

Activities and conditions affecting wildlife and their habitats in Central Oregon include conversion of habitats to agriculture, rural and urban development; new road and ROW construction; introduction of exotic plants; human uses on public lands; and high road and trail densities. As these activities occur across the landscape they can break up the habitats into smaller fragments and decrease the suitability of the habitats and the ability for wildlife to move through their historic ranges. This is especially true for wide ranging species such as pronghorn and sage grouse.

Recreational activities such as off-road motorized vehicles, mountain biking, hunting, horseback riding, rock climbing, and caving can disturb wildlife. These activities were once infrequent with associated minor effects, but the frequency of these uses has raised concerns about how well available habitat can function. A reduction in functional habitats increases the importance of remaining suitable habitat for all species and identifies a need to examine the current uses and needs in all areas.

While the B/LP RMP provided general guidance for improving and maintaining important wildlife habitats, it did not consider the conditions needed to support habitats for the variety of species (including BLM Special Status Species) that occur in the planning area.. The B/LP RMP identified the need to develop habitat management plans rather than clearly identifying the important habitats and providing guidelines for their conservation. The B/LP RMP stated that plans for sage grouse and bald eagles would be written during the planning cycle, but this has not occurred.

¹BLM special status species include plants and animals identified under the Endangered Species Act or other authorities. Refer to the Glossary for a description of the various categories referred to in the text.

The B/LP RMP did not identify the contributions the rural and urban private land uses can make toward providing new and desirable habitats. In many cases, conversion of the native plant communities to irrigated agricultural or rural residential uses provides an increase in the forage and water sources for those species that can adapt to close contact with humans.

Although population management goals for species such as mule deer, pronghorn, and elk were identified in the Brothers/La Pine Resource Management Plan, habitat capabilities or vegetation management goals were not integrated into those goals. The B/LP RMP did identify habitat capabilities reflected by changes in adjacent land uses, dispersal, and reproductive needs. In addition, “old” terminology such as “crucial habitat” is no longer used. New information on population numbers, movement patterns and habitat needs indicate that the goals and objectives of the B/LP RMP may not be consistent with current population needs or overall habitat capabilities. For example, the B/LP RMP identifies goals and objectives for sage grouse nesting areas around leks but does not address the location and importance of sage grouse wintering habitat.

Hydrology

The major rivers (the Deschutes, Little Deschutes, and Crooked) as well as some other perennial streams, within the planning area have been listed by the Oregon Department of Environmental Quality (DEQ) as water quality limited (See Affected Environment, Chapter 3). The state standards are based on the beneficial use of fisheries. State water quality standards not met in streams within the planning area include stream temperature, dissolved oxygen, pH, sedimentation, turbidity, and bacteria. These water quality values can be affected by management and natural changes on both public and private land, including: changes in riparian and upland vegetation resulting from timber harvest, livestock grazing, and other agricultural uses; changes in the shape of stream channels; construction and use of roads and trails in areas where runoff can flow into streams; and diversion of water out of stream channels. Not meeting the standards may affect the health of the aquatic ecosystem. The listing of streams as “water quality limited” by the DEQ is a procedure that was not addressed in the B/LP RMP.

The Interior Columbia Basin Ecosystem Management Project identified a link between changes in disturbance regimes to vegetation cover and between vegetation cover and composition to upland watershed health. A rapid increase in juniper stand establishment occurred during a period of favorable climatic conditions and reduced fire frequency and intensity (Gedney, *et al.*, 1999). Juniper successfully out-competes other vegetation for available moisture, resulting in reduced understory vegetation in open areas adjacent to juniper trees. Juniper stands in densities and locations outside of the range of historic variability, as well as human activities (e.g. road and trail construction, road maintenance, lack of road maintenance, off-road vehicle use, grazing, and horseback riding), may reduce ground cover, create ruts, and compact soils. As a result, overland flow is increased and water is concentrated in vehicle ruts, causing a reduction in infiltration of water and flashier flows within intermittent and ephemeral stream channels. These higher flows cause channel scour and streambank erosion, while decreased infiltration causes shorter flow durations for intermittent streams. Reduced periods of time that water remains in the channel diminishes the potential for establishment and growth of riparian vegetation, and reduces the amount and location of source water for wildlife. Overland flow and channel erosion results in sediment transport that contributes to downstream sedimentation and increased turbidity of perennial waters. This process has the potential to affect water quality as described above. The degree to which upland activities affect water quality and quantity is determined by the spatial relationship of these factors to the stream systems. Currently, the extent of effects of upland activities on the hydrology of the area is unknown. The B/LP RMP did not consider the relationships of these conditions to hydrologic systems.

Fire and Fuels Management

As described in the vegetation section, much of the public land within the planning area has missed two or more expected disturbance cycles created by fire, resulting in changes in species composition and density that may increase fire hazards or contribute to a decline in ecosystem function. The increase in fire hazard is especially critical when these conditions occur near or adjacent to developed land.

Central Oregon is one of the fastest developing areas in the state of Oregon. New neighborhoods and individual homes are being built in lands previously undeveloped. That area where the edge of urban development meets the edge of federally managed land is termed the wildland urban interface (WUI). The development of these areas adds a source of potential fire starts and increases the risk of damage or loss of private property from wildland fire on public lands.

The development of WUI lands has also resulted in greater concerns about emergency exit/ingress to communities and over the management of adjacent hazardous fuels. Potential conflicts between fuels reduction and recreational use, visual resources, and habitat management may arise.

Special Management Areas

There are various designations that BLM may attach to specific areas with special values. These Special Management Areas are established under various authorities, but generally fall into a category that includes some special attention to provide appropriate management of a sensitive or unique resource. The designations that are relevant to this process include Areas of Critical Environmental Concern (ACEC), Research Natural Areas (RNA), Wilderness Study Areas (WSA), caves, the National Wild and Scenic River System, State Scenic Byways, and National Backcountry Byways (see Glossary for definitions and authorities).

Areas of Critical Environmental Concern

The B/LP RMP identified Areas of Critical Environmental Concern (ACEC); however, due to new information or changed conditions these ACEC determinations may no longer meet the significance or relevance criteria for establishment of ACECs. In some cases, existing ACEC designations may no longer be appropriate, given the additional management policy applied to an ACEC area since the B/LP RMP. In other cases, new information on the expanded range of species (e.g. Peck's milkvetch) or better understanding of other resources (e.g. sage grouse, old-growth juniper, and cultural features) may provide an opportunity to expand or realign the boundaries of an existing ACEC, or lead to proposals for new ACECs. The increased development in Central Oregon and increased public use of BLM-administered lands has resulted in greater management concerns at many existing ACECs, and a need to re-define what uses should be authorized in these areas in order to maintain the values for which the ACECs were established.

Research Natural Areas

The B/LP RMP identified Research Natural Areas (RNA); however, in most cases, specific management policy for the RNAs was deferred to subsequent area-specific plans, most of which have not been completed. The increased development in Central Oregon and increased public use of BLM-administered lands has resulted in increased management concern about the Powell Butte and Horse Ridge RNAs and a recognition of the need to define what uses should be authorized in these areas to maintain the values for which the RNAs were established. Specific issues include trail use in the Horse Ridge RNA and

the possible impacts to RNA values, and a potential increase in visitation and associated effects to the Powell Butte RNA due to a proposed adjacent resort development.

Caves

The B/LP RMP did not identify any management policy for caves within the planning area. Since the adoption of the B/LP RMP, some of the caves on BLM-administered lands have been identified as “Significant” under the Federal Cave Resources Protection Act. Increased population growth in the area has resulted in greater numbers of cave visitors. The popularity of these sites, and the new USFS, Deschutes National Forest cave management policy in areas adjacent to BLM-administered lands, may affect future use and management needs at BLM managed caves, particularly in regard to rock climbing opportunities in Pictograph (Stout) Cave.

Wilderness Study Areas

The Badlands WSA has been the subject of considerable attention concerning designation as Wilderness (a Congressional designation) and the ongoing management within the boundaries of the WSA. National Interim Management Policy (IMP) limits motorized use to designated, inventoried routes. Specific guidance, designating routes and seasonal closures for the Badlands WSA, followed a Court order (Central Oregon Forest Committee v. Kenna, Civil No. 98-29-ST (D. Or.), Final Decision). There has been a continued demand to maintain motorized opportunities within the Badlands WSA, as well as continued demand to close the area completely to motorized use. Vehicle use occurs off designated, inventoried routes in violation of the interim management policy (IMP) for WSAs. This use includes OHVs, hunters, and sightseers. Non-motorized use has also become increasingly popular within the WSA. However, the B/LP RMP does not provide any guidance for managing non-motorized use within the WSA, including direction for functional trailheads or parking areas.

Non-motorized trail use is also increasing in the Steelhead Falls WSA. As with the Badlands WSA, the B/LP RMP does not address the management of these uses. Due to increasing levels of use and lack of designated and maintained trails, there has been a proliferation of user created trails in violation of the IMP. These conditions have led to concerns about the safety of visitors and maintenance of wilderness suitability.

Commercial and group use demand has increased in both WSAs. However, no specific policy to address these uses was included in B/LP RMP (See Visual Resource Issues for description of new visual resource management issues in WSAs).

Wild and Scenic Rivers

Three components of Wild and Scenic River Management are at issue within the planning area. First, Visual Resource Management standards for Wild and Scenic Rivers within the planning area are either absent or not consistent with BLM policy. Consequently, there is a need to create or modify this direction. Second, some lands administered by the BLM along the Middle Deschutes Wild and Scenic River were designated “open” by the B/LP RMP. The Wild and Scenic River plan did not address travel management designations. The current travel management guidance within the Wild and Scenic River plan must be reviewed to ensure that it is consistent with Wild and Scenic River and FEIS/PRMP objectives. Third, a portion of the Lower Crooked River (including the Chimney Rock segment) and the Middle Deschutes have been recognized as Aquatic Strongholds (Quigley and Arblebide. 1997). These portions of the rivers were identified as “at risk” for hydrologic function due to the intrusion of juniper into the watershed. Juniper has been out-competing riparian vegetation such as willow and herbaceous plants. As juniper replaces riparian species, overland flow of water and increased erosion are likely to occur. New guidance is needed to reduce this risk.

State Scenic Byways and National Backcountry Byways

The planning area contains a National Backcountry Byway (Crooked River corridor/ State Highway 27) and a State Scenic Byway (State Highway 31 in La Pine). Management of visual resources and recreation/interpretive services along these corridors may affect their use as scenic byways by assigning specific visual resource management goals or recreational/interpretive management goals. Changes in land status (via sale or exchange) could also affect the scenic quality of these routes.

Land Uses

For this planning effort, land uses include livestock grazing, minerals, rockhounding, military use, and Forest, Range, and Woodland Products.

Livestock Grazing

The B/LP RMP made decisions about forage allocation and areas available for livestock grazing based on natural resource conditions that, for the most part, are substantially unchanged. However, the B/LP RMP did not anticipate the increased conflicts resulting from an increase in the amount of recreational and other uses in grazing allotments and a change in land uses on private land adjacent to grazing allotments. In some places, housing subdivisions have been built in the middle of grazing allotments in open range areas, leaving the new homeowners to sort out how to build adequate fences, the permittee to deal with inevitable fencing failures and unleashed dogs, and the stray livestock in flower beds, on golf courses, and on busy residential roads. Homeowners are often unfamiliar with and resentful of the responsibilities of living next to rural activities, and the grazing permittees and BLM cannot always afford to absorb the increased management costs that come with responding to this situation.

The B/LP RMP did not provide direction for how to resolve conflicts or prioritize efforts. The result is that conflicts are solved on a case-by-case basis, often leaving the root cause in place, allowing conflicts to recur and escalate.

The BLM developed the Standards for Rangeland Health and Guidelines for Grazing Management (USDI BLM, 1997) to meet the requirements and intent of 43 CFR 4180, and provide agency policy and direction for livestock grazing management. The Prineville District BLM has completed these assessments on several allotments within the planning area, and is scheduled to complete all assessments by 2008. While assessments will not be completed as part of this process, the planning process will help identify important wildlife habitats, species, and areas of special concern, to help prioritize where assessments should be conducted first.

Where physical or biological conditions have changed, BLM managers can use existing guidance found in 43 CFR 4180 to make necessary changes in livestock grazing management. The objective of this guidance is to “promote healthy sustainable rangeland ecosystems, accelerate restoration and improvement of public rangelands to properly functioning conditions, and provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands.”

Minerals

There is an increasing demand on the public lands to provide mineral materials needed by state and local governments and private industry to build and maintain roads, highways, bridges and other infrastructure. However, other uses on and adjacent to

public lands are also increasing, resulting in an increased potential for conflicts with mining. Residents and recreational users have voiced objections to mining related noise, dust, truck traffic, and visual impacts to viewsheds. People are concerned about what will determine future decisions about material site development and use, and how such uses will affect them in the long term. New site development also has the potential for permanent or temporary removal of natural resources and reducing wildlife habitat suitability.

Many old mineral pits are located in the planning area that did not, in the past, require any specific rehabilitation plans. As more people inhabit the private lands near and adjacent to BLM-administered lands, concerns have been raised for how existing and future mineral material sites will appear over the long term and what types of uses would be allowed within those sites. In some cases, material sites offer unique recreational opportunities. The B/LP RMP did not address the potential conflict or opportunities between mineral material extraction and recreation use.

Rockhounding

Rockhounding sites within the planning area are being promoted by internet sites, rock shops, guidebooks, and the Prineville-Crook County Chamber of Commerce. At some collecting sites, rock collectors have dug deep holes, tunneled under unsupported earth, and undermined trees, creating public health and safety hazards. Digging activities have also damaged some riparian areas and stream channels. Illegal commercial use and excessive personal use threaten to deplete some sites and may result in the loss of future recreational rock collecting opportunities.

Forest, Range, and Woodland Products

An insect epidemic and subsequent salvage harvest have changed the forest structure, habitat, and fuels profile in the La Pine area since the B/LP RMP was completed in 1989. As a result, some decisions and management direction in the RMP regarding forest management may no longer be valid.

New information indicates that a change in focus is needed to address updated BLM-wide objectives for forest health, fire hazard, and wildlife habitat. Current management direction and scientific findings from the Interior Columbia Basin Ecosystem Management Project indicate that goals that are focused on healthy forest and rangeland conditions, with sustainable outcomes resulting from those conditions, are important to provide more stable natural resource-based economies. The B/LP RMP does not reflect projected commercial forest product outcomes based on a comprehensive, ecosystem approach that considers biodiversity, special status plant or wildlife habitat, general habitat connectivity, the role of old growth juniper, scenic values, or strategies for continued urban interface fuels treatments and insect and disease management.

The B/LP RMP did not consider the function of historic or natural disturbance regimes and the role that they play in maintaining vital ecosystem functions, nor address the relationship of forest management to these long-term desired outcomes. The B/LP RMP also did not recognize the degree to which natural forest habitats would be limited by the population growth within the area, or the importance of these shrinking habitats to wildlife populations and public use.

Special forest, range, and woodland products (firewood, posts, poles, boughs, transplants, etc.) are not specifically addressed in the B/LP RMP. Increasing growth of local communities is increasing the demand for both personal and commercial use of these products. Increasing harvest, competing uses, impacts, and a shrinking available resource base are stretching the sustainability limits of some of these products in some

areas. Updated guidance is needed to help make decisions regarding what, how much, where and when to allow harvest of these products.

Oregon Military Department and National Guard

BLM-administered land within the planning area has provided a unique training venue for the military since the late 1930s and continues to contribute to the mission of the Oregon Military Department (OMD) and National Guard today. The mission of the military is to remain in a state of preparedness in support of state and national security interests.

Increasing development adjacent to the existing training area may create a situation in which conflicts between some of the military uses and some residents of the area are likely to occur. Noise and dust from training may disturb adjacent landowners and thus, from the military perspective, reduces the usefulness of some of the training area they have traditionally used. The increasing use of the area for hiking, horseback riding, mountain biking, shooting and OHV use also sometimes conflicts with military use in the area. Because of these uses near and on lands used by the military, the Oregon Military Department desires access to new lands in order to meet its mission requirements.

The training area has been administered under a series of short term permits which limits the ability of the military to appropriate funding to rehabilitation efforts and does not allow for funding for long-term resource management. The B/LP RMP does not address this issue.

Visual Resources

Population growth and development within the planning area is expected to increase the variety and number of permit applications for developments and activities that have the potential to affect visual resources. Some examples are new roads, electrical transmission lines, material sites, water tanks, or cellular phone towers. The B/LP RMP did not identify Visual Resource Management Classes within the planning area as a baseline for assessing impacts to visual resources. The B/LP RMP also does not address key viewpoints or areas of high public concern regarding scenic quality that have changed within the past 10 years, nor does it address new policy for Visual Resource Management Classes within Wilderness Study Areas. Further, the B/LP RMP guidelines do not consider the increased emphasis on vegetation management for ecosystem health or increased emphasis on fuels treatments as part of the National Fire Plan, both of which have the potential to affect visual quality in the planning area.

Recreation

The increasing population and popularity of Central Oregon as a recreational “mecca” has been reflected in increased recreational use on BLM-administered lands. Increased conflicts among users, new resource management concerns, and increased management costs have accompanied the increase in use.

General Recreation Management

The B/LP RMP identified most of the area as an “Extensive Recreation Management Area”. This is a general classification applied to lands that have few concerns or conflicts that require a high level of management attention. An alternative classification, Special Recreation Management Area, may be more appropriate for a large portion of the planning area. This classification provides a vehicle for addressing resource concerns, user conflicts, and high levels of recreational use by creating identities and recreation

management objectives for areas and improving funding opportunities for managing uses. Most of the recreation access and use areas in the planning area appear uncared for with most points of access to public lands created through use, rather than by design. As a consequence, access and use areas often are neither safe, nor appropriate or desirable, which makes management of public lands difficult. Lack of information about land ownership and appropriate access has led to trespassing on private lands.

Recreational Setting and Demands

The BLM-administered lands in the planning area are of varying sizes ranging from 40 acre blocks to large blocks exceeding 30,000 acres. The recreational needs for public lands in the area are a combination of urban-type demands such as trail links between urban areas, after work hiking, running, OHV riding, or biking, day use and picnic areas; and demands for more dispersed extended recreational experiences like weekend outings to popular areas like Horse Ridge, the Badlands, Millican Valley OHV area, reservoirs, and State Parks. These weekend opportunities draw visitors from throughout the state and beyond, particularly for OHV use.

Members of the public who use these types of recreation settings have difficulty recognizing administrative boundaries, and thus effective management of these areas require a higher level of collaboration between different agencies, groups, and individuals to make the best use of limited resources and funding. Cities and counties within and adjacent to the planning area have identified BLM-administered lands as suitable for establishing regional trails. The B/LP RMP did not identify opportunities for or provide management direction to integrate regional trail or other recreation opportunities to meet state-wide projections or local community needs.

Motorized Recreation

OHV Setting and Demand

The overall increase in OHV use on BLM-administered lands has increased crowding and conflicts between trail users. OHV users have expressed a need for more OHV opportunities, including both longer trail systems, and shorter trails or play areas located close to urban areas, and an increase in winter-time trail riding opportunities. Current and future demand for OHV opportunities anticipate the need for OHV trail systems that meet seasonal demand and allow for a range of difficulty levels that satisfy a variety of users, including single-track (Class III) and quad (Class I), as well as full size 4X4s (Class II vehicles). BLM-administered lands provide important OHV opportunities during the winter, when other local areas are closed to OHV use. Many of these areas are also important wildlife habitats.

Most of the areas designated as either limited or open in the B/LP RMP lack adequate staging areas and dispersed camping sites, particularly for groups. Gravel pits often provide good opportunities for play or staging areas. The B/LP RMP did not provide management direction for how these areas should be managed. Some of these are appropriate for some uses, and not for others, depending on their location and the expected mineral use for the area. In general, these are unmanaged, yet are receiving increased levels of use.

Many smaller (40 to 120 acres), isolated parcels of BLM-administered land in the planning area were designated as "Open" in the B/LP RMP. Subsequent development over the past 10 years has surrounded many of these parcels with private residences, resulting in increased conflicts or a general lack of public access. The change in management setting for these smaller parcels has led to concerns about the suitability of managing them for cross-country OHV use.

OHV Management

Portions of the planning area were designated as “limited” in the B/LP RMP. Many of these areas did not undergo any further planning to define and designate the road and trail system, and therefore have remained essentially open to unmanaged OHV use. This has resulted in increased conflicts between OHV enthusiasts and private landowners, as well as between different recreational users. The lack of a designated and managed OHV trail system in these areas has also resulted in the spread of user-created roads and trails, as well as a diminished user experience for OHV riders. The B/LP RMP did not address the need for an expanded range of OHV opportunities, including winter riding areas when many USFS managed areas are either closed or in poor condition and specific trail routes for Class 1, 2 and 3 vehicles.

The combination of an increase in OHV use, additional residential development on private lands adjacent to areas of OHV use, and increases in all recreational uses have increased concerns about the noise and dust of these vehicles.

Non-Motorized Dispersed Use

Non-Motorized Recreation Setting and Demand

The growth of non-motorized trail use by equestrians, hikers, runners, mountain bikers, and others has resulted in conflicts between trail users and resource impacts. Overall a concern for public safety has developed and some users have noted that their enjoyment of these outdoor settings have diminished as a result of these problems. The increase in uses and conflicts has resulted in requests for designated non-motorized trails or areas, which were generally not identified in the B/LP RMP.

The B/LP RMP provided no management direction for trail opportunities beyond OHV use. Although OHV trails on BLM-administered lands are open to all users, the lack of identifiable and maintained trails for hikers, equestrians, mountain bikers and other non-motorized recreationists has resulted in users creating their own trail opportunities. The lack of identifiable, non-motorized trail systems limits recreation opportunities for the public; particularly those who do not live adjacent to public lands (see also Special Recreation Permits).

The continued popularity of mountain biking has led to increased demand for challenging riding opportunities on BLM-administered lands such as at Horse Ridge and Cline Buttes. This demand includes cross-country or single-track riding that is more primitive and backcountry in nature than most developed and maintained mountain bike trails. This demand also includes downhill courses. The location and nature of these types of activities may result in resource conflicts. Mountain bikers (as well as other trail users) in the Cline Buttes, Horse Ridge and Smith Rock areas of BLM-administered lands often trespass on undeveloped private property. Future development of these private parcels would disrupt this recreational use, and result in creation of new trails around private property and future conflicts between private landowners and recreationists.

Non-Motorized Recreation Management

Current BLM management policy for the Millican Valley OHV trail system limits mountain bike use to the designated OHV trail system, eliminating options for single track mountain bike opportunities in this area. The current BLM management policy for Millican Valley also limits mountain bikes to the same seasonal restrictions as motorized users. In general, the demand for mountain bike opportunities on BLM-administered land occur specifically during the winter, and these seasonal limitations have a large impact on opportunities for mountain biking.

Population growth in the planning area has resulted in increased use by a wide variety of recreationists, and the development of casual use sites for camping, rockhounding (see land uses for detailed discussion), target shooting, paintball, and rock climbing. These sites are unmanaged, and, in some cases, use of these sites results in resource conflicts or safety issues. The B/LP RMP provided no direction for management of many of these activities.

Temporary Use Authorizations

The District receives numerous, and often repeated requests for temporary use authorizations for activities such as photography, commercial filming, or educational purposes. There is no current procedure for streamlining these requests, nor does the B/LP RMP identify areas where these activities may be preferred or discouraged based on other resource needs.

Special Recreation Permits

Special recreation permits are issued for commercial recreational activities, competitive events, and group events that are publicized or would likely result in resource management issues. Population growth and increased visitation/awareness of BLM-administered public lands has increased requests for Special Recreation Permits in the planning area. These permit requests include annual or multi-year permits for outfitter/guides (flyfishing, nature hikes, equestrian trail rides, etc.), for single day events (group events, concerts, trail rides and races, etc.). The B/LP RMP provides no direction on how special recreation permits should be managed on issues such as number of permits, permitted use levels, etc.

Transportation and Utilities

The Bureau of Land Management authorizes right-of-way grants to federal, state, and local governmental agencies, companies, cooperatives, and private individuals to develop necessary transportation to utility systems through public lands. Because 43 percent of land within the planning area is administered by the BLM, these lands are laced with roads and other rights-of-way that are important to local communities, the region, and, in the case of natural gas pipelines and electric power transmission lines, the nation. A right-of-way corridor is an alignment that has been identified as a preferred location to accommodate similar or compatible rights-of-way. Public land law directs BLM to minimize adverse environmental impacts by avoiding the proliferation of separate rights-of-way and utilizing rights-of-way in common, to the extent practical (Section 503 (43 U.S.C. 1763) Federal Land Policy and Management Act).

Regional Transportation Systems

There are several major regional transportation corridors that traverse the planning area. These highways include U. S. Highway 97, the main north/south route through Central Oregon and U. S. Highway 20, the main east/west route through the state. State Route 126 connects Sisters, Redmond, and Prineville, and is being considered for expressway status. ODOT is planning to install passing lanes on segments between Redmond and Prineville that may affect adjacent public lands. A two mile segment of the highway located east of Redmond will eventually have to be relocated through public lands when it is improved. The existing location extends through a runway protection zone that has been designated by the Redmond Municipal Airport. Significant portions of each of these roads and others are located within rights-of-way across BLM-administered lands.

These highways are important components of economic development in the region and are intermingled with public lands. The existing highway alignments extend through urban centers, creating increased traffic and congestion problems. Improvements and relocation are likely to place specific demands on the surrounding public lands. The B/LP RMP did not anticipate these demands. For example, development in the south Redmond area has extended along both sides of Highway 97 and a highway interchange has been constructed in this area at Yew Avenue. Since the interchange was constructed, several land use projects have been developed, increasing demand and congestion in the interchange area. The congestion may eventually cause motor vehicles to back up over the at-grade railroad crossing on Airport Way, and up the exit ramps of Hwy 97, causing the interchange to fail.

The Oregon Department of Transportation in conjunction with the South Redmond Collaborative Planning Team is evaluating several proposals for highway improvements in the south Redmond area. In December 2002, ODOT completed the "Yew Avenue to Deschutes Market Road Analysis for the City of Redmond" (2002).

Solutions to this capacity issue involve considering public lands to accommodate future transportation corridors that would adequately alleviate congestion at the intersection. At some point, it is likely that a future "by-pass" for Highway 97 around the city could involve the same area.

Local Transportation Systems

A wide variety of roads exists on public lands, ranging from primitive roads or ways to arterials such as major highways. A primitive road or way is not maintained to guarantee regular and continuous use. They carry very low volumes and are normally spur roads that provide point access. Local roads serve a small area, receive low traffic volumes, and generally serve only a few uses. Many primitive ways or local roads in the planning area were not constructed and are considered user-created travel ways. Generally, user-created roads do not provide connectivity to specific destinations. Collector roads normally provide access to large blocks of public land and connect with or are extensions of public road systems. Collector roads receive moderate traffic volumes and accommodate mixed types of traffic and uses. Arterials are state highways or major county roads designed to accommodate mixed types of traffic and serve many uses. They receive high volumes of traffic and safety, comfort, and travel time are primary road management considerations.

BLM-administered public lands are currently accessible from a variety of roads, including state highways, county roads, local roads, and public ways. The network of BLM collector roads offers widespread access to public lands, providing administrative access for authorized uses and various casual uses, and opportunities for dispersed recreation throughout the area.

User-created roads proliferate and are often difficult to distinguish from designated system roads, or authorized rights-of-way. Signs or other means of directing people to, or along, designated roads is very limited, and contributes to unauthorized uses and trespass on private lands. In most areas, the numerous user-created travel ways on public lands exceed public access needs. Motorized uses adjacent to private lands have resulted in conflicts with property owners. User-created roads that access state highways or other major roads often have unsafe intersections that do not meet current standards and frequently access areas with repeated law enforcement problems.

An estimated 2,000 miles of user-created roads, or local roads that are not maintained or officially part of an integrated transportation system, are located on BLM-administered lands within the planning area. Many roads, regardless of jurisdiction, are neither appropriately located nor maintained to standards that would provide an efficient and effective transportation system that meets today's community needs.

County jurisdictions have identified historical roads from research gathered from historical records. These roads provided a transportation network for early settlers and continue to be recognized by the county as public roads. Historical roads are not necessarily improved or maintained by the county and frequently present management challenges. A formal vacating process is necessary if the county chooses to abandon the road. Some of these roads were developed on un-appropriated public land prior to 1976, under the authority of Revised Statute (RS) 2477. By this law, Congress stated, "The right-of-way for the construction of highways over public lands, not reserved for public uses, is hereby granted." It was not necessary at the time to obtain further review by the federal government. While these and other county roads or state highways generally provide the backbone of the maintained transportation system across the planning area, in some cases these roads are redundant or meet community needs for transportation routes.

Rights-of-Way

Utility and access to private inholding rights-of-way occur throughout the planning area and range from major utility corridors to grants for primary or emergency access for subdivisions and resorts. During the period the B/LP RMP has been in effect, an average of roughly twenty five new rights-of-way per year have been granted in the planning area. Most rights-of-way were granted to provide access or utility service through public lands and include roads/driveways and electric/telephone service. Utility and transportation rights-of-way extending over 780 miles have been granted on BLM-administered land within the planning area. Though necessary, the development, use, and maintenance of rights-of-way can fragment or destroy wildlife habitat, interrupt scenic vistas, and disrupt the ability of affected lands to support uses such as, but not limited to, recreation and grazing.

Right-of-Way Regional Utility Corridors

At present, there are approximately 200 miles of regional corridors identified by the Western Utility Group that extend through public lands in the planning area and include routes for electric transmission lines and natural gas pipelines. Future development of these corridors would be subject to environmental review based on a specific proposal. There is an anticipated demand for new or expanded corridors to accommodate growth and changing energy demands for the nation.

Rights-of-Way for Communication Sites

There are three existing communication sites located in the planning area (see Chapter 3, Transportation and Utility Corridors). Uses at these sites include government agencies that provide emergency services and two way radio communications, commercial telecommunication providers, and multiple user facilities that are independently managed by right-of-way holders. These sites are exclusively for low power use; high power broadcasting is strictly prohibited. There is adequate space available at these sites to accommodate additional users during the next ten to fifteen year period, as well as land area for additional new construction, if necessary.

As the population of the region grows, it is anticipated the demand for low elevation sites, especially cell phone towers, is expected to increase significantly along transportation corridors to provide improved coverage for cell phone users; and the demand for high elevation sites is also expected to increase slightly. Antennas for cellular phones can co-locate on existing utility structures and are capable of sharing structures with multiple providers.

Land Ownership

Retention and Disposal

Public lands are increasingly important for open space, wildlife habitat, recreation, and to separate urban sprawl as private lands within the area are developed. Public comments have stressed a desire to see large blocks of public lands within the planning area be maintained in public ownership and with public access. Designating lands to be retained rather than available for exchange limits the ability of land managers to acquire other desirable parcels, including private inholdings within large blocks of land.

Development is beginning to surround small, isolated blocks of public lands. This affects the ability of these lands to provide wildlife habitat or other public benefits. In some cases, private land ownership blocks public access to public lands, limiting public use to all but adjacent property owners. These lands generally do not provide great public benefits, but may also be difficult to sell or trade because of their limited access.

Public lands are increasingly desirable as a source of land for urban growth and infrastructure to support growth. In particular, both the City of Redmond and the rural service center of La Pine have adjacent blocks of BLM-administered lands that are desirable for future community expansion.

Another issue is, that as part of the process through which Oregon became a state, the Federal Government owes the state of Oregon several thousand acres of land. These lands are known as “in lieu” lands and the Department of State Lands has expressed an interest in several parcels of BLM-administered land in Central Oregon.

Land ownership status can affect management of natural resources such as minerals or ground and surface water, as well as less tangible resources like scenery, open space, wildlife habitat, archaeological resources, and areas of tribal interest.

Acquisition

Private lands that provide important natural values are becoming increasingly scarce in the planning area. Private inholdings within Deschutes County will most likely be developed in the next 10-15 years, requiring additional rights-of-way grants, which can also affect the wildlife habitat effectiveness of the adjacent public lands. Acquisition of private inholdings would limit both the additional fragmentation of wildlife habitat and recreation use areas with new roads and conflicts between public land users and private landowners.

Public Health and Safety

Increasing population in the Central Oregon area has resulted in a growing number of situations with the potential to affect public health and safety.

Firearm use has generated public safety and noise complaints for many lands administered by the BLM, especially those located adjacent to residential areas. This use includes both target shooting and hunting. The greatest concern is the risk of human injury or death. These issues are expected to increase with increased public visitation of public lands. Other issues include resource damage, private property damage, noise, associated trash, shell casings, targets and shooting tables left behind by firearm users. Opportunities for managed target shooting are available, but extremely limited, particularly given the population growth and potential growth in demand for these opportunities.

Dumping residential, commercial, and hazardous waste on public land is illegal and can damage scenic quality, degrade recreation experiences, and pose a serious health or safety risk if the materials are toxic. These activities generally occur where there is motorized access and appear to be related to the distance from residences and population centers.

Campfires within the planning area also pose a risk to public health and safety. Unsafe location of fires, temporary lack of attention to campfires, and the failure to completely extinguish fires provides the opportunity for accidental ignition of wildland fire. Such fires pose risks to recreationists, nearby private lands and developments, as well as, native vegetation (see Ecosystem Health and Diversity, Ch. 1).

The increased development surrounding BLM-administered lands has resulted in more concerns about camping, illegal occupancy on BLM-administered lands, and nighttime use that is unmanaged and results in resource damage and user conflicts (i.e., large parties, bonfires, dumping, etc.).

Archaeology

The B/LP RMP established goals for the management of archaeological resources following the regulatory direction found in the National Historic Preservation Act, 36 CFR 800, and Executive Order 11593. As a consequence of increased use of BLM-administered lands, inadvertent or intentional damage to archaeological resources often occurs as a result of artifact collecting, vandalism, surface disturbance, and other destructive activities.

An Office of Inspector General (OIG) audit, completed in 2000, identified several critical weaknesses in BLM-wide cultural resource management programs. The OIG found the BLM lacks a long-range plan to survey areas for the purpose of understanding human behavior and use of the land. The OIG also found BLM deficient in other proactive efforts including stabilizing sites, interpreting sites, and preparing National Register nominations. The B/LP RMP does not suitably address the findings of that audit. Similarly, Executive Order: Preserve America (2003) provides additional management direction for preserving America's heritage, building preservation partnerships, improving federal stewardship of historic properties, and promoting preservation through heritage tourism. The B/LP RMP does not adequately reflect the intent of that Executive Order. Both the OIG audit and recent Executive Order are attempts to bolster proactive policies toward managing the archaeological resource base in general and "at-risk" significant archaeological resources in particular. "At-risk" significant archaeological resources may be defined as those heritage resources that are listed with, or likely to be included with, the National Register of Historic Places and are currently threatened by a variety of human activities and/or natural causes.

Although much of the decision about managing the cultural resource program found in the B/LP RMP remains sound, some changes need to be made. Management objectives do not meet the expectations of Section 110 of the National Historic Preservation Act to manage archaeological resources in an affirmative manner. Historic properties have not been evaluated for their eligibility to the National Register, nor has any effort been made to identify how those properties might be utilized in the best interest of the public. Similarly, the B/LP RMP does not meet the expectations of Section 14 of the Archaeological Resources Protection Act. That section directs the Secretary of Interior to prepare a schedule for surveying public lands that are likely to contain the most scientifically valuable archaeological resources.

Social and Economic Values

As reflected in the issues described above, there is a tremendous demand for the management of public lands to be responsive to the social and economic values of the local, regional, and national populace. Demands and desires for lands, uses, and commodities associated with local social and economic values may be in conflict with regional values, such as is represented by the issue over mineral demands. National values for maintaining public lands for wildlife habitat or recreational or other commodity production may conflict with local economic values for lands to be made available to respond to local needs. In many cases, not all values or interests in those lands can be met. The B/LP Resource Management Plan did not effectively display these trade-offs in land use or land ownership decisions.

Issues Considered but Not Further Analyzed

Special Management Areas

Wilderness Designation

Scoping identified a desire by some that the Badlands WSA be designated a Wilderness Area. Designation of Wilderness Areas is the responsibility of Congress. Consequently, this issue is beyond the scope of this plan.

Transportation and Utilities

Millican/West Butte Road

When the Analysis of the Management Situation was published, one issue of concern was the need for a route suitable for commercial traffic to link Prineville to Highway 20 and markets to the east. Recent legislation has provided Crook and Deschutes counties rights-of-way for the Millican/West Butte Road, (BLM Road 6520). A new paved road, utilizing this route, was completed in June of 2004. The development of this route, in combination with the existing paved Millican/West Butte Road, links Prineville to Highway 20. Consequently this issue has been resolved.

Areas of Traditional Cultural Significance

Early in the scoping process, an issue was raised concerning whether access to areas of traditional cultural significance or resources would be affected by alternatives considered in this EIS. However, the land use plan decisions made in this document would not preclude any existing direction regarding consultation with tribes prior to implementing activities such as land transfers or road and trail system designation. Therefore, this issue was not considered in detail.

Planning Criteria/Legislative Constraints

The alternatives developed to resolve the issues described above must meet legal mandates, such as the Endangered Species Act; satisfy numerous regulatory responsibilities; support national policy, including BLM Strategic Plan goals; and follow State Director guidance (see 43 CFR 1610.0-4 (b)). A detailed list of sources of guidance is provided in Appendix B.

Planning Process

Relationship to BLM Policies, Plans, and Programs

Scoping and Public Involvement

The planning process has followed the direction of The National Environmental Policy Act (NEPA), The Federal Land Policy and Management Act (FLPMA), as amended, 43 U.S.C. 1701 et seq., and the more detailed BLM Land Use Planning Handbook (Handbook 1601-1). The emphasis of the process has been to provide an open, inclusive forum for the discovery and discussion of the important issues within the planning area. Scoping for this plan revision covered a period of 10 years and culminated in the Publication of the Analysis of the Management Situation (AMS) in October 2001. The AMS, coupled with subsequent public meetings, served as another scoping period as over 100 new comment letters were received by the BLM in response to these events. Over this period, new information that is relevant to the planning process was generated both locally and throughout the Northwest.

Coordination and Consistency with other Plans

Brothers/La Pine Resource Management Plan

Not all of the B/LP RMP is being revised by the FEIS/PRMP. The scope of the decisions included in the FEIS/PRMP is identified in the Purpose and Need and the description of the planning issues. For clarity, a more specific summary of the B/LP RMP guidance that is not being revised by the FEIS/PRMP is in Appendix C.

Wild and Scenic River Plans

The Middle Deschutes and Lower Crooked Wild and Scenic Rivers have existing management plans governing resource management within those areas. The BLM-administered lands within these areas are included in the planning boundary, and the existing management plans for these areas are incorporated by reference into the FEIS/PRMP.

Noxious Weeds

Noxious weed management within the planning area is currently in conformance with Vegetation Treatment on BLM-administered lands in Thirteen Western States (FEIS BLM-91-022-4320 1991) and the Prineville District Integrated Weed Management EA OR-053-3-062 (1994). These plans prescribe an integrated approach involving prevention, early detection, inventory, timely control (using biological, mechanical, manual, and chemical techniques), monitoring, and site rehabilitation. The selection of control methods is influenced by land management objectives, effectiveness of the control technique on the

target species, size of the infestation, environmental concerns, land uses, and economics. BLM cooperates with county, state, and other federal agencies that have jurisdiction in or near the planning area.

Two Rivers Resource Management Plan

About 15,000 acres in the far northern portion of the current planning area fall within the boundary of the Two Rivers Resource Management Plan (BLM, 1986). This planning effort would change the boundary of the Two Rivers Management plan in order to include the 15,000 acres within the Upper Deschutes Planning Area.

Collaboration

The final formulation of the issues and alternatives benefited from the advice of a group that was chartered under the Federal Advisory Committee Act through the Deschutes Provincial Advisory Committee. This group, called the “Issue Team,” consisted of tribal, local, state, and federal governmental representatives as well as private stakeholders, including representatives of a diverse range of interest groups.

Chapter 5 details the membership of the Issue Team, as well as describing how our collaboration with tribal, local, state and federal representatives implements the direction of the legal mandates for collaboration and consultation as described under Planning Criteria/Legislative Constraints.

Related Plans

The BLM-administers lands near or contiguous with lands managed by the Deschutes National Forest, Crooked River National Grassland, La Pine State Park, Ochoco National Forest, Smith Rock State Park, Prineville Reservoir State Park, and Bureau of Reclamation lands adjacent to Prineville Reservoir. Through the collaborative process described above and in Chapter 5, the planning process fully considered alternatives that would promote achievement of the goals of management on lands adjacent to BLM-administered lands. Alternatives for managing BLM-administered lands near Prineville Reservoir are a response to a proposed State Park and Recreation Department and Bureau of Reclamation Management Plan for Prineville Reservoir. Similarly, the FEIS considers alternatives specifically responsive to Deschutes and Crook Counties and the City of Redmond planning documents, and to the state “in lieu” selection entitlement.

The ongoing collaboration and consultation with tribal representatives will ensure that the range of alternatives is responsive to tribal concerns.

The Oregon Military Department has recently completed both an Integrated Natural Resources Management Plan and an Integrated Cultural Resources Management Plan that will help to guide their activities within the permit area. The OMD would modify its plan if the area available for training changes or if the conditions of use are modified.

Policy and Decisions

Millican OHV Litigation

A decision element not described above is the Central Oregon Forest Committee v. Kenna, Civil No. 98-29-ST (D. Or.), Final Decision. As a part of the lawsuit settlement, the court required that “The Bureau of Land Management (BLM) shall analyze the impacts of its Millican Valley Off-Highway Vehicle Management Plan (OHV Plan) or the successor to said Plan in an Environmental Impact Statement (EIS). This EIS shall consider the cumulative impacts of OHV use consistent with this Court’s opinion, as encompassed by the Findings and Recommendations of November 5, 1998, as modified by the Order of February 26, 1999.”

The FEIS/PRMP will meet the requirements of this decision by:

- Developing alternatives that describe areas where OHV use is allowed within the planning area, including conditions of use within those areas that, when followed, would have generally predictable effects on resources.
- Analyzing the cumulative effects of implementing the alternatives for motorized uses on wildlife species, including deer, elk, pronghorn, and sage grouse.

Interior Columbia Basin Strategy

The FEIS/PRMP follows the Interior Columbia Basin Strategy (USDA-FS and USDI-BLM, 2003). This strategy was developed in order to implement the knowledge acquired during The Interior Columbia Basin Ecosystem Management Project (ICBEMP). This strategy involves building on the findings from the scientific assessment (USDA-FS and USDI-BLM 1996) when developing Resource Management Plans. Where relevant, this information is cited in the rationale for guidance that is Common to Alternatives 2-7 in Chapter 2.

Goals and Vision

The following Goals and Vision section describes, for each issue category, both the broad goals BLM seeks to address, and the vision for how lands within the resource management plan area would look or function in the future. These visions were developed by community members during the plan preparation process.

Ecosystem Health and Diversity

Goal

Restore and support healthy upland riparian and aquatic ecosystems in conjunction with vegetation and wildlife habitat needs, riparian conservation strategies, watershed restoration methods, and economic reliance of the population on public lands. Management actions would emphasize ecosystem sustainability and health throughout the planning area, while managing for expected increases in human population and use levels.

Recognize the role of fire in the ecosystem and manage prescribed fire to maintain the disturbance cycle where practicable outside the Wildland Urban Interface. Provide guidance for fire suppression and fuels treatments based on resource values at risk such as homes, facilities, and special habitats. WUI areas, in particular, would be prioritized and scheduled for fuels treatments early in the implementation phase.

Vision

Vegetation - The planning area contains large, un-fragmented blocks of healthy shrub-steppe plant communities, intermixed with old-growth juniper woodlands and large and small openings containing grasslands, meadow, and savanna. Shrub-steppe and savanna communities have a vigorous and diverse composition of native shrubs, grasses, and forbs spatially arranged in a mosaic of seral stages in large and small patch sizes appropriate to conditions of climate, landform, and soils. Ponderosa and lodgepole pine forests are present in a diverse mix of seral stage, structure, stand size, and species composition. Ponderosa pine is dominant on suitable sites. The proportion of old forests and old woodlands is maintained at current levels with options for expansion in the future. Special status plant species are maintained or increased in their distribution and abundance. Noxious weeds and other invasive or non-native species are decreased in their distribution and abundance. Forest, woodland, savanna, treeless shrub-steppe, meadow, and riparian communities are healthy and properly functioning ecosystems sufficient to support quality wildlife habitat, hydrologic processes, and social and economic needs.

Riparian and Aquatic - Riparian areas, floodplains, and wetlands function naturally relating to water storage, groundwater recharge, water quality, and fish and wildlife habitat. Vegetation structure and diversity controls erosion, stabilizes stream banks, heals incised channels, provides regulation of air and water temperature, filters sediment, aids in floodplain development, dissipates energy, delays floodwater, and recharges groundwater.

Biologically diverse habitats are maintained to ensure the presence of organisms and processes necessary to sustain native aquatic communities over the long term. Adequate spatial distribution of these communities is maintained, avoiding habitat fragmentation and allowing for re-colonization of populations after disturbance. A diversity of breeding habitats for aquatic species provides clean gravels, quiet backwaters, and emergent and submergent vegetation. Rearing habitats for larvae and fry are available in backwaters, shallow edges, and other protected sites.

Wildlife - Ecosystem processes are functioning properly. Maintaining and restoring healthy ecosystems benefits a variety of wildlife species by increasing the quality, quantity, and variety of habitat. Habitats support healthy, productive and diverse populations and communities of native plants and animals, including special status species and species of local importance, appropriate to soil, climate, and landform. Habitats occur in large contiguous blocks, are adequately arranged spatially, and contain a natural diversity of animal and plant communities. Animal populations are present and move freely across the landscape. The amount and diversity of wildlife habitats are maintained or improved through time. Native plant communities exist in blocks of various sizes distributed in patterns across the landscape appropriate to site potential. Maintenance and restoration of healthy ecosystems throughout key areas and management of specific habitat components such as vegetation cover, forage, and roads, contribute to maintaining habitat conditions within the site potential of the area.

Watershed/Hydrologic Function and Water Quality - Stream networks, uplands, floodplains, and riparian areas are resilient and where capture, storage and release of water limits the effects of sedimentation and erosion, and where infiltration, percolation,

and nutrient cycling provide for improved water quality, water quantity, timing and duration of flows, and diverse and productive aquatic habitats. Upland soils exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate to soil, climate, and landform. Surface water and groundwater quality, influenced by agency actions, meet state water quality standards. Riparian areas are maintained, restored or improved to achieve a healthy and productive ecological condition for maximum long-term multiple use benefits and values. Water quality is maintained equal to or above legal water quality standards, consistent with beneficial uses of water. Water quality provides stable and productive riparian and aquatic ecosystems.

Fire/Fuels Management - Fuels in the planning area are managed to provide for protection of Communities at Risk from the undesired effects of wildland fire, while assisting in the attainment of other management goals. Safety of the public and fire fighters is the first priority in planning fuels management activities, while recognizing the role of wildland fire as an essential ecological process and natural change event.

Air Quality - Air quality is generally good. Public health is protected by holding the amount of smoke entering populated areas to a minimum. The National Ambient Air Quality Standards (NAAQS) are being met, with no significant deterioration of air quality. There are no human-caused visibility impacts to Class I areas.

Special Management Areas - The resources that led to the designation of special management areas such as caves, ACECs, and Wilderness Study Areas are protected. Guidelines for the amount and type of public uses in SMAs are established. Opportunities and partnerships for public education, enjoyment and interpretation for these resources are fostered.

Areas of Critical Environmental Concern - The special resources for which ACECs were designated are protected. Guidelines for the amount and type of public uses are established. In addition, opportunities for public education and interpretation are fostered, along with partnerships to help protect and interpret these resources.

Wilderness Study Areas - Wilderness Study Areas are managed to maintain wilderness suitability, consistent with the 1995 "Interim Management Policy for Lands under Wilderness Review" (IMP).

Research Natural Areas - Research Natural Areas are protected from outside human influences. Natural ecological and physical processes are allowed to occur. These representative natural plant communities are generally reserved for education and scientific study but are also available for some types of low-impact non-motorized recreation.

Caves - Significant caves or caves nominated for significance under the FCRPA remain in a natural condition, with cave resources monitored and managed. Graffiti and litter are removed and caves appear natural and provide a sense of discovery for visitors. Recreational and interpretive opportunities are created, consistent with the management of cave resources.

Land Uses

Goal

Manage the land in a manner that recognizes the nation's need for domestic sources of minerals, food, timber, and fiber from the public lands. At the same time, protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric,

water resources, and archeological values. Preserve and protect public lands are in their natural condition, and assure they provide, where appropriate, food and habitat for fish, wildlife and domestic animals, and land for outdoor recreation and other uses.

Promote healthy sustainable rangeland ecosystems; accelerate restoration and improvement of public rangelands to properly functioning conditions; promote the orderly use, improvement and development of the public lands; establish efficient and effective administration of grazing of public rangelands; and provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands (43 CFR 4100). Accomplish these goals consistent with land use plans, multiple use, sustained yield, environmental values, economic, and other objectives.

Vision

Land uses, including but not limited to livestock grazing, mineral, and commercial forest uses, occur in a pattern across the planning area, where economically feasible, socially compatible, and environmentally responsible, that support community and national demands and contribute to the local economy and quality of life.

The National Guard and Oregon Military Department (OMD) continue a long-term partnership with the BLM. The partnership demonstrates land stewardship that integrates resource objectives and goals of public lands with military training objectives. Public lands support the military training purposes of the Biak Training Center where consistent with public land management objectives. The military is provided a reliable long-term land base for training operations. The military has invested time and funds to maintain and restore sustainable ecological conditions within designated training areas consistent with integrated resource management and training objectives.

Visual Resources

Goal

Identify and protect visual values on public lands, assuring integrating environmental design arts in planning and decision-making.

Vision

The scenic qualities of the planning area are maintained and improved over time. Visual Resource Management (VRM) classifications identify the scenic importance of landscape characteristics and guide the design and development of future projects. Vegetation management emphasizes long-term over short-term visual objectives and seeks to create more naturally appearing landscapes over time.

Recreation

Goal

Provide a broad spectrum of resource-dependent recreation opportunities to meet the needs and demands of public land visitors, while ensuring the continued availability of public lands and related waters for a diversity of resource-dependent outdoor recreation opportunities. More intensive visitor management, resource protection, and facility

investments are provided where the public has demonstrated its desire to use public lands for outdoor recreation, and outdoor recreation is a high priority.

Vision

The planning area provides a wide variety of recreational opportunities for a growing demand. Local and out-of-area visitors enjoy frequent activities on public lands that are close to urban and residential areas, such as hiking, running, mountain biking, and off-highway vehicle use. Commercial recreation opportunities provide a public service while protecting resource values and minimizing conflicts with other recreationists and adjacent landowners.

Local communities are integrally involved in developing and implementing management strategies for individual geographic areas within the planning area. Increases or improvements in facilities such as picnic areas, group use sites, interpretive sites or trails are developed through an integrated effort with other recreational providers and local communities. The number and types of facilities change over time to reflect demographic changes and the changing popularity of different types of recreation.

Public lands in the planning area are distinct from private lands and have a unique identity that fosters desired recreation opportunities for that area. Information on recreation opportunities, travel management, interpretation, and management goals and policies is readily available to visitors.

Areas within highly developed surroundings are managed for an emphasis on safety and compatibility with surrounding land uses. Designated access points, roads and trails are designed to minimize conflicts with neighbors as much as possible. Designated recreation trails, facilities, restored and maintained recreation sites and access points, and intensive recreation management help to meet increased demand. Public lands provide opportunities for regional trails that link communities. Local roads and trails provide a pleasing experience for users within a specific area that matches the recreation emphasis for that area.

Transportation and Utilities

Goal

Provide Transportation and Utilities facilities that protect public safety, provide user safety, protect the environment, conserve and protect resources, and enhance productivity and use of public lands. Identify facilities as part of an approved transportation plan to allow for allocation of construction and maintenance funds; and minimize damage to scenic and esthetic values, fish and wildlife habitat, and otherwise protect the environment.

Collaborate with local communities to plan reasonable, safe access to or across public land if necessary, in a manner that serves to protect and conserve sensitive resources and the environment.

Regional Transportation Planning - Develop and maintain functional and efficient regional transportation systems coordinated with State, local and BLM jurisdictions that provide links between local communities by considering land allocation needs for regional transportation corridors in conjunction with multiple resource management.

Local Transportation Planning - Provide reasonable access for recreation, fire, safety, and resource management that meets objectives for access management.

Vision

Transportation systems, utility corridors and communication/energy sites on public lands are the result of an inter-regional coordinated effort between tribal, federal, state, and local governments that support links between communities. The corridors provide routes for approved or anticipated land uses that cannot be reasonably accommodated on other lands.

New or expanded transportation/utility system corridors and communication/energy sites are located considering the intrinsic values of public lands. Values include but are not limited to visual considerations, wildlife habitat, open space, recreation, traditional and cultural uses, and sensitive or unique resources.

Land Ownership

Goal

Retain public lands in federal ownership, unless disposal or acquisition of a particular parcel would better serve the national interest and the needs of state and local people, including needs for lands for the economy, community expansion, recreation areas, food, fiber, minerals, and fish and wildlife. Changes in public land ownership are considered where consistent with public land management policy and where these changes would result in improved management efficiency.

Withdrawals are used to dedicate public lands to specific uses by protecting specific resource values over the development of lesser values. Lands may be segregated from some or all of the public land laws and/or location and entry under the mining laws. Withdrawals are also used to transfer jurisdiction over an area of Federal land from one department, bureau, or agency to another department, bureau, or agency after alternative realty tools have been considered (such as a rights-of-way reservation) and found inadequate.²

Vision

Public lands provide social and economic value for local, regional, and national communities. Land is maintained in public ownership that provides contiguous native ecosystems able to support healthy plant and animal populations or provides other important natural values. Land acquisition promotes improved quality, location, or distribution of public land ownership consistent with resource management objectives. Public lands are located in a pattern that can be efficiently and effectively managed. Public lands are available for federal and state projects, community growth, and projects for non-profit groups.

² Departmental Manual 603.1.1 addresses specific guidance to the BLM for managing the withdrawal program that includes making, modifying, and revoking withdrawals. The manual also addresses post withdrawal management objectives and stresses the periodic review of existing withdrawals.

Public Health and Safety

Goal

Provide the public with recreation areas and facilities that are free from recognized hazards insofar as practical, and meet the requirements of BLM Manual H-2111 – 1, 2001: Safety and Health Management in accordance with safety policies and procedures.

Vision

BLM-administered lands are available for activities that do not compromise the health and safety of land users or adjacent landowners, or diminish natural resource protection. Public lands are managed to discourage illegal activities such as dumping and vandalism. Bullets fired from BLM-administered lands do not strike public land users or adjacent landowners. Firearm-related property damage and garbage related to shooting is experienced infrequently. Natural and cultural resources are not damaged by firearm discharge or illegal activities. Firearm discharge and other recreational uses are managed concurrently to improve recreational opportunities and reduce user conflict.

Archaeology

Goal

Locate, protect, preserve, enhance, and interpret cultural resources in accordance with existing legal authorities.

Vision

Cultural resources and “At-Risk” significant archaeological resources are managed in a pro-active manner for their various use categories³. Information about the archaeology of the planning area is current. Residents of, and visitors to, the area have an opportunity to learn about the local prehistory and history of the region. Interpretation, education, inventories, monitoring, and law enforcement enhances protection and preservation of “At-Risk” significant archaeological resources.

³As defined in BLM Manual 8100

Chapter 2: Alternatives



Introduction

This chapter describes alternative ways of resolving the planning issues and sustaining the long-term health, diversity, and productivity of public lands in the planning area. The population of Central Oregon is predicted to nearly double over the next twenty years, and this growth would increase human demands on public lands, and conflicts between uses and users. The range of alternatives includes different approaches to balancing these demands and reducing conflicts.

This chapter contains the following sections:

- **Developing the Range of Alternatives** – describes the process and key concepts used to develop the range of alternatives considered in detail.
- **Overview of the Alternatives** – briefly describes each of the key components of the seven alternatives considered in detail, and includes a description of why Alternative 7 was identified as the Preferred Alternative.
- **Comparison of the Alternatives** – describes the measures used to compare alternatives and includes tabular comparison of all of the alternatives considered in detail.
- **Alternatives Considered in Detail** – includes a summary of the major components of each alternative and a more detailed description of each alternative by issue category.
- **Alternatives Considered but not Analyzed in Detail** – briefly describes alternatives that were considered, but not in detail with rationale.

Developing the Range of Alternatives

The range of alternatives was developed using ideas brought forth through public scoping and by the Issue, Intergovernmental, and BLM Interdisciplinary Teams (see Chapters 1 and 5). The alternatives resolve the significant issues identified during scoping. These issues were arranged into the following Issue Categories: Ecosystem Health and Diversity (including Vegetation, Wildlife, Fire/ Fuels, Hydrology, and Special Management Areas), Land Ownership, Transportation and Utilities, Land Uses (including Forest and Range Products, Livestock Grazing, Minerals, and Military Uses), Visual Resources, Recreation, Public Health and Safety, and Archaeology. Social and economic considerations were integrated into each of the relevant issue categories. The public's interest in resource development and using these lands also played a major role in developing the alternatives. Conservation measures, or mitigations, were often developed to help resolve or minimize matters of controversy, dispute, or concern specific to overlapping resource management activities or conflicting land uses.

The range of alternatives responds to a variety of human demands and provides continuing management direction to sustain a healthy ecosystem. The alternatives are combinations of proposed resource allocations and allowable uses that will guide site-specific decisions on public lands for the next 10-20 years.

Key Concepts

There are a number of key concepts used to develop the alternatives that are helpful to understand prior to reading the alternative descriptions. These are briefly described below.

Planning and Geographic Area Direction

Management direction is applied to specific resources across the planning area as a whole. For instance, there are objectives to manage for an efficient transportation system that apply throughout the planning area. This planning area management direction may be supplemented by additional management direction that applies only within specific geographic areas. The planning area is divided into the following geographic areas:

- Badlands Wilderness Study Area
- Bend / Redmond Recreation Area
- Cline Butte Recreation Area
- Horse Ridge Recreation Area
- La Pine Recreation Area
- Mayfield Recreation Area
- Millican Valley OHV Area
 - o Millican Plateau
 - o North Millican
 - o South Millican
- Northwest Recreation Area
- Prineville Reservoir Recreation Area
- Smith Rock Recreation Area
- Steamboat Rock Recreation Area
 - o Steelhead Falls Wilderness Study Area
- Tumalo Recreation Area

Conflict and Demand

All of the alternatives are concerned with balancing conflict and demand. As described in the issues, the need to revise the Brothers / La Pine Resource Management Plan (B/LP RMP) is based largely on unanticipated potential conflicts with or the changing and increasing variety of resource demands in this area. This is especially apparent between human uses and wildlife habitat needs, particularly in winter range areas. Conflict also exists between recreational user groups and between adjacent rural or urban residents and public land use such as motorized recreation, livestock grazing, and mineral development.

Land Uses – Livestock Grazing and Mineral Development

The Issue Team developed a conceptual framework to evaluate the conditions under which livestock grazing and mineral sales would generally be made available during the planning cycle. The framework considers—on a broad scale—factors that contribute to both the potential for conflict and the potential demand or importance of those uses. The criteria developed by the Issue Team was used for Alternatives 2-6, and modified in Alternative 7, the Preferred Alternative.

Recreation –Travel Management and Recreation Emphasis

Conflicts in the planning area occur between public land visitors and adjacent landowners as well as between wildlife and recreation and different types of recreationists (e.g., motorized vs. non-motorized users). Conflicts also occur between similar recreational visitors, such as when a motorized trail system becomes crowded and results in unsafe conditions (dust, poor visibility, large number of encounters). The demand for meeting multiple recreation needs is increasing. The alternatives approach the issue of conflicts by designating different areas for different users or by separating different trail users in a particular area by creating separate motorized and non-motorized route systems and by integrating wildlife emphasis with appropriate

recreational uses. These travel management and recreation emphasis designations vary by geographic area in each alternative and are based on the potential for conflict, recreational demand, or other resource concerns.

Travel Management Designations

Travel management designations of Open, Limited, or Closed are applied to motorized use:

- **Open** - Areas where significant resource or social conflict issues are not expected.
- **Limited** - Areas where motorized public access is managed to meet specific recreation and resource management objectives. These limitations may include:
 - Restricting the types of vehicles used in an area
 - Restricting motorized vehicles to designated roads and/or trails
 - Limiting the season or time of use.
- **Closed** - Areas where motorized vehicle use should be restricted to protect resources, ensure visitor safety, or reduce conflicts. Areas are closed to motor vehicle use where recreation management emphasis is on providing exclusive non-motorized recreation opportunities.

Recreation Emphasis

The FEIS/PRMP applies a specific recreational emphasis of each area. The recreation emphasis designations include:

- **Multiple use shared facilities** – combines motorized and non-motorized uses on the same roads and trails in the same area.
- **Multiple use separate facilities** – combines uses in the same area, but provides some level of separate facilities.
- **Non-motorized recreation emphasis** – emphasizes shared use in the same area, with motorized use limited to roads and trails provided for non-motorized use.
- **Non-motorized recreation exclusive** – closes the area to motorized use and emphasizes non-motorized trail use except on county roads or state highways. Motorized use in the area only for administrative requirements or to access recreation facilities.
- **Non-recreation emphasis** – these include tracts of BLM-administered lands that are managed for research purposes (i.e., RNAs) or as administrative sites or leases.
- **Roads only emphasis** – areas where any trail development is unlikely to occur within the planning cycle due to location, size, or fragmented nature of the public land parcel.

Ecosystem Health and Diversity

Vegetation

The alternatives compare two major management emphases, Current Distribution and Historic Range of Variability. Alternative 7 modifies the Historic Range of Variability concept slightly and is labeled Enhancing Healthy and Diverse Landscapes.

“**Current Distribution**” reflects a management emphasis on shaping vegetative communities to rehabilitate specific areas or to achieve specific resource objectives in priority areas. The assumption is that caring for resources in this way will produce spin-off benefits for all human needs, including ecological, social, and economic. For example, the primary objectives of a vegetation restoration project could be seeding forbs to restore a foraging area for sage grouse or cutting sagebrush to improve habitat for Peck’s Milkvetch. There would be no emphasis on treating landscapes to expand plant communities toward a “pre-European settlement” range, although pre-European settlement conditions may be replicated in some areas. In reality, some high priority areas would overlap and be treated similarly to the strategy employed under “historic”

management. However, treatment units and habitat patch sizes would generally be smaller and overall project treatment acres would be fewer than under the historic emphasis. Prescribed fire and mechanical techniques would be used in concert to achieve desired objectives. Key plant communities and habitat types would be treated to achieve optimum productivity, diversity, or some other specified objective identified at the project level. Use of mechanical treatments as a tool would be emphasized in wildland-urban interface areas.

“Historic Range of Variability” reflects more emphasis on a return toward “pre-European” conditions and distribution. While this does not mean replicating exact conditions from a selected date in the past, this approach manages the ecosystem for a combination of patterns, patch sizes, species distribution, and seral stages that are consistent with expected fire frequency, intensity, and distribution. Historic condition and distribution is a management strategy derived from the assumption that ecosystems were in equilibrium and functioning as they were intended based on evolutionary adaptations that occurred under the influence of natural geologic, climatic, and ecological processes. Use of prescribed fire can come closer to approximating those conditions than most mechanical treatment approaches, so fire would be emphasized as a management tool where practical. There would be an emphasis on managing juniper within its inherent role on the landscape, restoring many areas where young juniper have encroached to an earlier seral condition. Vegetation treatments would be designed to limit juniper occupancy to those fire-resistant areas and at historic densities. Historic condition, structure, and composition of old-growth juniper woodland, ponderosa pine stands, meadows, and riparian communities would be restored and expanded to their historic ranges where practical. Use of mechanical treatments would be emphasized in wildland-urban interface areas. These areas may depart from historic conditions in some cases to facilitate fire-safe communities.

“Enhancing Healthy and Diverse Landscapes” adds additional clarification to how the concept of historic range of variability would be applied given the human influences that have occurred over the last 150 years within the planning area and their continued influence. The potential for restoration to historic conditions will be influenced by these and other factors as well. While the primary focus on restoration of healthy watershed and hydrologic function, conservation and restoration of source habitats for wildlife species, and emphasis on restoration of old growth structure and natural disturbance regimes would continue as described under the Historic Range, this emphasis would clarify how those social and economic factors would be considered when making final decisions about the appropriateness of restoration and other management activities.

Wildlife

Some of the issues that influenced the development of these alternatives include habitat patch size, quality, connectedness and human disturbance effects in relation to meeting species needs. The public’s interest in how these lands are used also played a role in shaping the alternatives by influencing the development of conservation measures or mitigations to help resolve conflicts between commodity and recreational uses and the needs of a variety of wildlife species.

“The conservation of wildlife and of biological diversity at large has taken various approaches in the U.S. Sometimes the focus is on the provisions of life requisites for a single species of plant or animal, such as spotted owls, elk, or grizzly bears. Sometimes it is on the provision of habitats for a suite of species, i.e., a guild or biological community, such as cavity-dependent or wetland-associated animals. And sometimes the focus is on ecosystems, i.e., integrated systems of land, water, and biota in contiguous areas, e.g., watersheds, landscapes, or regions” (Johnson and O’Neil, 2001). In general, this plan uses all three of these approaches for management and assessment of wildlife resources.

In this plan, management considerations are directed at some individual species such as bald eagles, sage grouse, deer, elk and pronghorn, and at groups of species addressed by the use of source habitats such as shrub-steppe, juniper woodlands and riparian habitats. The Rangeland Health Standards and Guidelines for Livestock Grazing Management (USDI BLM, 1997) represent an ecological approach for integrating livestock use with wildlife needs and is an integral part of these approaches.

The approach this plan has taken is to generally follow a system of single- and multi-species management emphases to enable the resource management plan and environmental impact statement to: address both single- and multi-species needs depending on objectives; identify broad-scale patterns of habitat change that affect multiple species in a similar manner; address the needs of many species efficiently; and describe the management of some individual species of high public interest.

Wildlife Emphasis Levels

Alternatives 2 - 7 in general have common objectives for management of wildlife that are included in one of three management emphasis levels – Primary, Secondary, or General. Management direction at all levels would be expected to benefit all species of focus (e.g. ungulates, neotropical migratory birds, special status species, etc.). The main techniques used for managing for wildlife under the different emphasis levels include:

- Seasonal closures for motorized use
- Disturbance distance buffers
- Habitat effectiveness guidelines
- Motorized travel route densities
- Un-fragmented habitat patch size
- Priority for restoration treatments
- Miscellaneous conditions for use (i.e., group use requirements for recreation, no surface occupancy stipulations for mineral leasing, etc.)

Definitions and guidelines for the different wildlife emphasis area are as follows:

Primary wildlife emphasis - wildlife is one of the most important management considerations for an area. Areas are included to benefit wildlife and retain high wildlife use.

Secondary wildlife emphasis - wildlife is one of several resource management programs that are of focus in an area, and typically receive a slightly lower, but still significant, level of management consideration. Areas allocated to a secondary emphasis are intended to support wildlife and maintain a moderate amount of use.

General wildlife emphasis - wildlife typically receives a lower level of consideration to most other resource management programs. These areas, as a whole, should still contribute to species occurrence and distribution, but typically are not the focus of intense management efforts for wildlife. Generally, guidelines are tied to minimum legal requirements identified in the sections on “common” guidance (Standards for Rangeland Health, BLM Special Status Species Policy (6840), and the Threatened and Endangered Species Act).

Source Habitats

The source habitat management concepts used in this plan have been adapted from the strategy developed in the Interior Columbia Basin Ecosystem Management Project (ICBEMP) for managing terrestrial source habitats. This ties management approaches taken in this Resource Management Plan to the scientific information developed as a part of the ICBEMP, which was a larger-scale assessment and management strategy that encompassed the entire Columbia Basin, including the FEIS/PRMP planning area.

Source habitats are those characteristics of vegetation that contribute to a specie's population maintenance or growth over time and within an area. These source habitats are described using the dominant vegetation cover type and the structural stage, various combinations of which make up the source habitats for the terrestrial families¹ and provide the range of vegetation conditions required by these species for cover, food, reproduction, and other needs.

The source habitat component of the FEIS/PRMP has been developed to consider and provide habitat for productive and diverse populations and communities of plant and animal species; provide for recovery of listed species; provide habitat capable of supporting harvestable resources; and provide for habitats on BLM-administered lands. The purpose of providing management direction regarding source habitats is to change declining trends in terrestrial habitats by maintaining important vegetation characteristics (such as plant species composition, rangeland and forest vegetation structure, snags, and coarse woody debris), which various terrestrial species need to survive and reproduce.

Management direction for source habitat has two different approaches in Alternatives 2 through 7 that are linked to the vegetation management approaches of using current versus historic distribution. The first approach, used in Alternatives 2, 4, and 5, would manage for source habitats only within their current geographic distribution and would impart a greater emphasis on continuing to provide cover for deer and elk where it currently exists, regardless of whether that reflected an historic distribution of cover components in the planning area. The second approach, used in Alternatives 3, 6, and 7, would manage for source habitats in their historic geographic distribution by increasing their current geographic distribution and improving connectivity and patch size (typically for shrub-steppe habitats, and to a lesser degree ponderosa pine habitats, but typically decreasing the amount and distribution of juniper woodlands and lodgepole pine habitats). The "historic" approach emphasizes biological diversity where management is focused more on maintaining and restoring conditions similar to those developed by natural disturbance processes.

Habitat Effectiveness

It is possible that areas containing abundant source habitats may not support persistent populations of some species because of disturbance and fragmentation primarily associated with motorized travel routes. For instance, source habitats may contribute to positive or stationary population growth, but motorized travel routes effect may override the habitat effect, thereby creating conditions that, over time, reduce wildlife populations. (Wisdom et al., 2000, p. 5).

Habitats contribute more to wildlife populations depending on the condition and this can be displayed in terms of "habitat effectiveness." Habitat effectiveness can be influenced by a number of factors, such as plant species composition, structural condition (habitat quality), patch size, location (arrangement across the landscape), and the amount of disturbance. For this planning effort, the analysis focuses on the effectiveness of habitat that contributes to species of focus². The approach used in this plan is to identify source

¹Family (of groups) – a collection of groups of species that share general similarities in source habitats, with similarities arranged along major vegetative themes that are conventionally addressed by managers (Wisdom et al., 2000).

²Species of focus are vertebrate species for which there is ongoing concern about population or habitat status. BLM used five criteria to develop the list of species that were the focus of our planning and assessment. For this planning effort species were included if they met any of the following:

- Species that are included in the Special Status Species Policy (6840) which includes: federally listed threatened, endangered, proposed or candidate species; Bureau Sensitive, Assessment, or Tracking Species; and State listed species.
- Species of local interest, such as deer, elk, pronghorn and golden eagles.

habitats by general vegetation types and to display habitat effectiveness by alternative as it relates to the amount of influence of motor vehicles and un-fragmented patch size.

Urban and Rural Areas

The Upper Deschutes Resource Management Plan alternatives are shaped significantly by the dynamics of the communities that inhabit this area. As described in other parts of this document, those dynamics are driven in large part by the changing rural and urban character of the population and economies. This is reflected both in terms of resource demands and individual group or community preferences and expectations.

Alternatives 5, 6, and 7 reflect those changing dynamics and community needs with management emphasis for certain lands based on the relative “urban” or “rural” character of the surrounding (non-BLM) land uses within the planning area. This concept is meant to capture the relationship of BLM-administered lands to the expected changes in population growth and development in different parts of the planning area –including some differences in management emphasis that relate to the conflicts, demands, and the preferences and expectations of the social and economic needs of the communities within the planning area. This distinction depends on the changing conditions of the surrounding land uses rather than a strict geographic or demographic interpretation of current conditions. Therefore, there is no hard-and-fast line dividing these areas.

In general, BLM-administered lands within the planning area considered “urban” have one of the following characteristics:

- They are adjacent to urban or rural population centers – including high density non-conforming rural land uses, residential or resort zoning, or small acreage development; or
- They are in areas where non-public land ownership tends to be highly fragmented, and flanked or surrounded by BLM-administered lands.

Those lands considered “rural” in the planning area generally have the following characteristics:

- They are adjacent to large blocks of agricultural zones and uses;
- The public ownership may be fragmented, often without public access, but usually surrounded by low density development associated with rural agricultural rather than rural residential or small acreage developments;
- The public lands are in generally large contiguous blocks adjacent to national forests and grasslands or other BLM-administered lands to the east.

Public Land Classifications

BLM-administered lands are classified into four categories that establish guidance about their suitability for long-term ownership as follows:

- Zone 1 – lands with national or statewide significance (for wildlife, recreation, scenic or other values). Zone 1 lands are classified for retention in public ownership and are areas where management emphasis is being placed on increasing public land holdings through donations, exchange or sale.
- Zone 2 – lands with high resource values. Zone 2 lands are identified for retention or possible exchange for lands with higher resource values or transfer through the Recreation and Public Purposes Act.
- Zone 3 – lands that generally do not provide substantial resource, public, or tribal benefits; that many not be cost effective for BLM to manage; or that would represent

a greater public benefit in other ownership. Zone 3 lands are potentially suitable for transfer, sale or other disposal, including lands identified as having potential land use benefits for local community expansion

- Community Expansion (CE). Lands zoned CE are retained in public ownership until needed for specific community purposes.

Overview of the Alternatives

There are seven alternatives considered in detail. This section provides a brief overview of each of those alternatives. Alternatives considered in detail include one “No Action/No Change” Alternative (Alternative 1), and six “action” alternatives (Alternatives 2-7) that would reflect various levels of change from the existing Brothers-La Pine Resource Management Plan direction. All alternatives would include Continuing Management Direction that is not being revised (see Chapter 1 and Appendix C). All alternatives include some elements that do not vary between the “action” alternatives. All of the “action” alternatives strive to develop a balance of uses, and so it is difficult to briefly characterize them. Generally, none of the alternatives eliminates any one type of use entirely. In many cases, if a use is more limited in one geographic area in a particular alternative, there may be an increase in that use elsewhere in the planning area in the same alternative to achieve that balance of different mixes of uses present in each alternative.

There are some elements that are found in all alternatives. These elements are identified as “Continued Management Direction” in the section “Alternatives Considered in Detail,” but are not described in this overview. Continued Management Direction reflects the following categories of management direction:

1. Management Direction from legal statute, regulation, or manual direction. This management direction may not have been specifically included in Brothers-La Pine Resource Management Plan (B/LP RMP, ROD 1989). This includes management direction for things such as restricted uses near bald eagle nests or current regional decisions on noxious weed abatement techniques.
2. Management Direction from B/LP RMP, including amendments by subsequent modifications from other decisions that are not being revised by the Upper Deschutes Resource Management Plan.

Some of the issues identified early in this planning process were resolved using one approach in the “action alternatives”. These are identified under the category “Management Direction Common to Alternatives 2 - 7” in the Alternatives Considered in Detail section. This management guidance represents areas where there was little controversy over the best way to resolve the issue. One example of this approach is the common management direction for the “action” alternatives for Archeological resources considered “at risk.” The common approach categorizes “at risk” resources, prioritizes those resources for future actions, and limits uses that have a high likelihood of significantly impacting the integrity of those resources. These components are not included in this overview.

Alternative 1 – No Action/No Change

This section describes the current management direction provided by the existing Resource Management Plans (RMPs) and decisions applicable to the Upper Deschutes Planning Area. This alternative includes existing direction for the Millican OHV area from the Millican OHV Environmental Assessment and Millican litigation settlement agreement.

Alternative 2

This alternative would have the least amount of overall change from current management. In general, this alternative would continue a mix of uses throughout the planning area, resolving conflicts on a case-by-case basis rather than by separating uses, or applying specific conflict and demand thresholds. Alternative 2 emphasizes shared trail use (motorized and non-motorized) throughout most of the planning area.

Alternative 3

This alternative increases emphasis on reducing conflicts between human uses and wildlife habitat management objectives and separating recreational uses. It relies on the use of Areas of Critical Environmental Concern (ACECs) as a management strategy to meet wildlife and other management objectives. This alternative places a greater focus managing for primary or secondary wildlife habitats with a primary or secondary emphasis across the planning area than does Alternative 2.

Alternative 4

Alternative 4 combines the approaches used in Alternatives 2 and 3, and includes more emphasis on providing for recreation opportunities (more than Alternative 3, but less than 2) in areas and during seasons when the demand is greatest. This alternative would also place a greater emphasis than Alternative 2 on reducing conflict between land uses and other users or adjacent residents. Recreation uses would be more separated than Alternative 2, but less than Alternative 3, and there would be an emphasis on certain types of recreation over others within geographic subdivisions. ACECs would provide special management objectives that emphasize ecosystem and wildlife habitat management, but these areas would generally be smaller or less frequently distributed across the planning area than in Alternative 3.

Alternative 5

Alternative 5 would utilize the “urban/rural” concept discussed earlier. The emphasis would be to focus reduced or lower conflict activities and higher quality wildlife habitat within the “urban” areas (generally includes most of Deschutes and Jefferson counties). There would be limited use of ACEC direction to protect resources, and more reliance on broad-scale conservation approaches across the planning area.

Alternative 6

Alternative 6 takes an approach that, in contrast to Alternative 5, emphasizes the future of effective wildlife habitats outside of the areas most likely to be affected by residential and urban development. This alternative puts less emphasis on reducing conflicts between land uses, recreational users, and residents in the “urban” areas adjacent to residential areas than does Alternative 5. More emphasis is on reduced conflicts between wildlife management objectives and human activities away from residential development areas in the “rural” areas (generally includes most of Crook County).

Alternative 7 (Preferred Alternative)

Alternative 7 is based in part on areas of consensus developed with our Issue Team and includes changes made in response to comments made on Alternative 7 of the Draft

Environmental Impact Statement. Although specific direction changed in response to those comments, the overall emphasis of the Alternative 7 remains as described here. Alternative 7 takes an approach that combines various features of the previous alternatives. It places more emphasis on primary and secondary wildlife habitat emphasis areas in the southeast or “rural” portion of the planning area due to the greatest potential concentrations of species needs. However, for the North Millican area, Alternative 7 does modify habitat effectiveness goals and place limitations on winter motorized use in order to balance wildlife habitat and recreation use needs. It places more emphasis on primary and secondary wildlife habitat emphasis areas in the southeast or “rural” portion of the planning area in the area of the greatest potential concentrations of species needs, but also allows the opportunity for increased amounts of year-round motorized use in much of that area. It emphasizes more separation of recreational uses than shared uses. Alternative 7 would modify the “conflict and demand” threshold criteria used in “Common to Alternatives 2 - 7” to determine areas available for continued livestock grazing use during the life of the plan.

Identification of the Preferred Alternative

The Preferred Alternative was identified based, in part, on consensus recommendations from the Deschutes Provincial Advisory Committee, and because it would, better than other alternatives considered, balance uses and allow for a flexible management response to changing conditions.

Consensus Recommendations from the Deschutes Provincial Advisory Committee

The Deschutes Provincial Advisory Committee (PAC) chartered a working group (Issue Team) that helped to formulate its recommendations about the Preferred Alternative. The Preferred Alternative reflects a number of areas of consensus from the collaborative process used to develop this plan. These include:

- *Ecosystem Health and Diversity* – a broad scale conservation approach to management of Old Growth Juniper, and a modified boundary on expanded Peck’s Milkvetch ACEC.
- *Transportation* – designation of transportation corridors north and south of the City of Redmond.
- *Land Uses* – grazing matrix developed to evaluate and categorize allotments for present and future decisions about continuing livestock grazing within those allotments and areas available for salable mineral extraction (tied to expanded Peck’s Milkvetch ACEC boundary location); and areas allocated for military uses.
- *Recreation* – motorized use Limited to designated roads and trails.
- *Land Ownership* – lands designated for future community expansion (CE), conceptual agreements on configuration of Z-1 and Z-2 lands.

The PAC provided a consensus recommendation on most of the changes made between the Draft and Final Environmental Impact Statements.

Rationale for the Preferred Alternative

Resolution of Issues

The Preferred Alternative provides direction to maintain and restore healthy and diverse ecosystems. This is done primarily by focusing management on prevention of future and repair of current impairments to hydrologic function and disturbance mechanisms in high priority watersheds, and by moving from a generally “Open” off-highway vehicle designation to a “Limited to Designated Trails” concept across the planning area. The Preferred Alternative emphasizes restoration of shrub-steppe habitats – recognizing

the limitations and challenges that restoration of these and other “historic conditions” present throughout the fast growing and developing planning area. Restoration of high quality source habitats for a variety of species – including sage grouse - is a keystone to long-term conservation strategies for that and other wildlife species.

The planning area represents serious challenges for integrating winter range use and motorized recreation use. The Preferred Alternative emphasizes winter range over motorized recreation use more than some of the alternatives in some of the most important winter range and sage grouse habitat, but allows an increase in the amount of winter riding opportunities over what is available currently.

The Preferred Alternative would, better than other alternatives, provide a balance of separated and mixed motorized and non-motorized uses. Over 60% of the planning area is available for designated motorized use opportunities, and this includes some increase in the amount of trails available during the winter. Available areas are arranged such that larger blocks that can provide an extended visit, like the Millican Valley OHV area, are provided farther away from urban centers, but a mixed use emphasis was maintained in the some of the most popular “close in” opportunities such as Cline Buttes. Similarly, for non-motorized users, the Preferred Alternative also provides larger blocks of land farther from the urban centers that are designated non-motorized exclusive, such as the Badlands, or non-motorized emphasis for future trail development such as Horse Ridge. The Preferred Alternative represents a loss of total area available for motorized users compared to the current situation, although it adds to the amount of area available during the winter riding season.

The demand for non-motorized recreational opportunities is also increasing rapidly, and the mixture of motorized and non-motorized recreational activities becomes less and less compatible as the density of each increases in the relatively small geographic areas in the plan. In the long-term, separation of these uses in many areas is more likely to support a quality experience for a wider variety of users. The size and configuration of the separate use areas in the Preferred Alternative is a reasonable balance that capitalizes on existing infrastructure and considers other factors such as wildlife and residential growth activity, but will not completely mitigate all conflicts between wildlife and recreationists or between recreationists and adjacent landowners.

The Preferred Alternative resolves some but not all of the issues associated with other uses such as grazing and mineral uses. The grazing matrix, as modified for the Preferred Alternative, allows the most flexibility of any of the alternatives to integrate economic and administrative considerations of ranchers with the social and ecological components of the fast growing urban interface.

The designation of the expanded Peck’s Milkvetch ACEC, the Tumalo Canals ACEC, and the decision to manage old growth juniper with a broad-scale conservation approach also represents a key integration of ecological, social, and economic concerns that are uniquely present in the Preferred Alternative. A broad scale conservation approach for managing old growth juniper provides more flexibility to consider the important facets of this unique ecosystem throughout its limited range rather than focusing on discrete pieces of that ecosystem as represented in alternatives that encompass portions of the old growth juniper in ACECs. Designation of the Peck’s Milkvetch ACEC in the heart of the range of juniper old growth will also indirectly provide protection for the juniper ecosystem as well as the rare plant. Use of mineral materials within the Cline Buttes area - a highly desirable source because of its quality, quantity and proximity to future anticipated road projects - will also provide the opportunity for substantial taxpayer benefit while the designation of the ACEC will limit those uses in the areas of highest potential conflict with residents.

Summary

The Preferred Alternative builds on areas of consensus identified during the planning effort and reflects a balance of uses that would meet the needs of local communities as well as national mandates for management of public lands. It provides a mix of management emphases that recognizes the individual identities and social and economic values of the local communities. It will meet long term military training needs and provide a flexible framework for managing livestock grazing that responds to changing conflicts and demands.

The Preferred Alternative would also provide reasonable mitigation for urban and rural residents from impacts of land use activities while still providing for traditional uses like livestock grazing and salable mineral material site development. It would provide for separated motorized and non-motorized recreation uses that offer opportunities in close proximity to urban areas as well as larger blocks of public lands for uses farther from urban centers. The Preferred Alternative would integrate recreation and wildlife management objectives throughout the planning area and includes elements that support current scientific approaches to ecosystem management and an aggressive approach to management of hazardous fuels in the urban interface. It would establish a proactive framework for managing present and future at-risk significant archeological resources and would include an approach for determining future areas available for firearm use that would be integrated with local governments, reduce risk to neighbors, and provide for firearm uses that would complement desired recreation experiences.

Comparison of Alternatives

The environmental impacts of the alternatives can be compared by examining the key components described below and displayed in numerical contrast in Table 2-1 Comparison of Alternatives. The description of Alternatives Considered in Detail includes a brief summary of some of the expected outcomes of each of the Alternatives, and Chapter 4, Environmental Consequences includes a detailed description of the probable outcomes.

Ecosystem Health and Diversity

- *Vegetation condition*- Acres of general vegetation priority treatment and acres of specific priority treatments, including, Verified High Restoration Priority Subbasins, aquatic strongholds, canyons, priority old juniper old growth, ACECs, ponderosa pine, sage grouse, and mule deer winter ranges.
- *Fire/Fuels Management* – Acres of estimated annual prescribed fire treatments outside of the wildland urban interface and mechanical treatments including the wildland urban interface area.
- *Wildlife Emphasis Levels* – Acres and percent of land managed for Primary, Secondary, or General.
- *Special Management Areas* - Acres in Areas of Critical Environmental Concern.

Land Uses

- *Livestock grazing*– Acres available for livestock grazing, total AUMs and numbers of allotments available under each alternative. Acres are also displayed by the categories described in the grazing matrix: Open, Available or not as a Reserve Forage Allotment, or allotments that would be Closed.
- *Minerals* – Acres and percent of planning area that would be available for locatable, leasable, or mineral sales entry.
- *Forest and range products* – Cubic and board foot volume available per acre.
- *Military uses* – Acres and percent of planning area available for long term military use.

Recreation

- *Recreation Emphasis* - Acres and percent of planning area by specific recreation emphasis designations.
- *Travel Management Designation*– acres and percent of planning area by specific travel management including type of use and season of use.

Land Ownership

- *Land Ownership* – acres and percent of planning area by specific land tenure/zoning classifications, Retention (Z-1), Retention with option to exchange (Z-2), Disposal (Z-3), or Community Expansion.

Transportation and Utilities

- *Regional Transportation*- length of corridors identified for future rights-of-way between Redmond and Bend.
- *Local Transportation* – miles of collector roads or local roads. Roads designated as collector roads form the backbone of the BLM transportation system. Local roads are available for future designation as either a part of the permanent transportation system or to be closed.

Public Health and Safety

- *Firearm Discharge* – acres and percent of planning area to be closed to all firearm discharge or firearm discharge unless legally hunting.

Table 2-1 Comparison of Alternatives¹

Issue Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Ecosystem Health & Diversity							
Vegetation							
Vegetation Management Emphasis	No change from Brothers/ La Pine	Current Distribution	Historic Range of Variability	Current Distribution	Current Distribution	Historic Range of Variability	Enhancing Healthy & Diverse Landscapes
Vegetation Priority Treatment Areas (acres):							
WUI	General guidance to improve land health, emphasis on juniper and shrub control and salvage of lodgepole pine	83,727	83,727	Same as 2	Same as 2	Same as 3	Same as 3
Verified High Priority Restoration		0	45,098				
Lower Crooked River Sub-basin		40,746	40,746				
Upper Crooked River Sub-basin		29,722	29,722				
Aquatic Stronghold Restoration		5,883	0				
Canyon Treatment		12,317	56,611				
Priority Old-Growth Juniper Restoration		323	0				
Peck's Milkvech Treatment Area		5,766	5,766				
Ponderosa Pine		94,412	127,276				
Priority Sage Grouse Restoration		15,684	0				
Mule Deer Winter Range Restoration		71,000	230,250				
Total vegetation treatment (15 years)²							
Fire/Fuels Management							
Prescribed fire treatments (estimated acres/year)							
Years 1 – 5	2,580	1,265	3,838	Same as 2	Same as 2	Same as 3	Same as 3
Years 6 – 15	2,580	5,253	9,210				
Mechanical treatment (includes WUI) (estimated acres/year)							
Years 1 – 5	2,150	11,385	11,512	Same as 2	Same as 2	Same as 3	Same as 3
Years 6 – 15	2,150	5,253	6,140				
Wildlife							
Crucial Winter Range (deer and antelope)	47,343	None designated	None designated	None designated	None designated	None designated	None designated
Source Habitats	None identified	Current Distribution	Historic Range of Variability	Current Distribution	Current Distribution	Historic Range of Variability	Historic Range of Variability
Wildlife Emphasis (acres / %)							
Primary ³	160,000 / 40%	99,000 / 25%	256,000 / 63%	159,000 / 39%	117,000 / 29%	218,000 / 54%	244,000 / 61%
Secondary	55,600 / 14%	22,000 / 5%	57,000 / 14%	31,000 / 8%	134,000 / 33%	29,000 / 7%	33,000 / 8%
General	187,000 / 46%	281,000 / 70%	91,000 / 23%	214,000 / 53%	153,000 / 38%	156,000 / 39%	126,000 / 31%

Issue Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Special Management Areas							
Designated ACECs (acres)							
Wagon Roads	75	875	875	875	875	875	875
Badlands (included within WSA)	16,684	16,684	16,684	16,684	16,684	16,684	16,684
Horse Ridge (also an RNA and ISA)	609	609	609	609	609	609	609
Powell Butte (also an RNA)	510	510	510	510	510	510	510
Peck's Milkvetch	4,073	4,073	4,073	4,073	11,144	11,144	10,325
Alfalfa Market Road	0	0	4,200	4,200	0	0	0
Juniper Woodlands	0	0	31,011	6,756	0	0	0
Sage Grouse	0	0	0	16,257	0	0	0
Smith Rock	0	0	2,119	0	0	2,119	0
Tumalo Canal ⁴	0	1,050	0	0	1,050	1,050	1,050
Lower Crooked River (included within WSR)	2,592	0	0	0	0	0	0
Total ACEC Acres	24,543	23,801	60,081	49,964	30,872	32,991	30,053
Land Uses							
Livestock Grazing							
Acres available for livestock grazing ⁵	389,900	389,348	389,348	348,682	228,625	347,890	268,815
AUMs / Number of Allotments ⁶							
Available (Open)	25,840 / 124	25,779 / 124	25,779 / 124	23,545 / 86	13,261 / 61	24,375 / 115	20,785 / 84
Open or available as RFA ⁷	0	0	0	0	0	0	472 ⁹ / 1
Available as RFA	0	0	0	0	0	0	1,967 ¹⁰ / 10
RFA or not available ⁸	0	0	0	0	0	0	1,834 ¹¹ / 23
Not available (Closed)	0	69 / 0	69 / 0	2,345 / 38	12,530 / 63	1,508 / 9	721 ¹² / 6
Minerals							
Land available for mineral sales (acres / %)	403,910 / 100%	349,199 / 86%	347,080 / 85%	335,772 / 83%	311,799 / 77%	347,080 / 85%	349,199 / 86%
Land available for Locatable Mineral Entry	403,910 / 100%	Same as 1	Same as 1	Same as 1	Same as 1	Same as 1	Same as 1
Land available for Mineral Leasing	374,365 / 93%	Same as 1	Same as 1	Same as 1	Same as 1	Same as 1	Same as 1
Forest Products							
Volume (estimated ccf / mbf per year)	500 ccf / 250 mbf	1200 ccf / 600 mbf	1500 ccf / 750 mbf	Same as 2	Same as 2	Same as 3	Same as 3
Military							
Land available for military use (acres / %)							
Core Area	29,744 / 7%	36,397 / 9%	21,207 / 5%	26,194 / 6%	29,760 / 7%	29,741 / 8%	28,818 / 7%
Extended Area	0	0	0	0	0	25,924 / 6%	15,167 / 4%
Total Area	29,744 / 7%	36,397 / 9%	21,207 / 5%	26,194 / 6%	29,760 / 7%	55,665 / 14%	43,985 / 11%

Issue Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Recreation Emphasis							
Recreation Emphasis (acres / %)	316,000 / 78%	312,000 / 77%	157,000 / 39%	235,000 / 58%	211,000 / 52%	166,000 / 41%	147,167 / 36%
Multiple use/shared facilities	0	0	29,000 / 7%	0	41,000 / 10%	31,000 / 8%	27,235 / 7%
Multiple use/separate facilities	42 / <1%	58,500 / 14%	65,500 / 16%	122,000 / 32%	86,000 / 21%	69,000 / 17%	84,339 / 21%
Non-motorized emphasis	11,000 / 3%	26,000 / 6%	82,000 / 20%	28,000 / 7%	55,000 / 13%	84,000 / 21%	92,057 / 23%
Non-motorized exclusive	76,000 / 19%	5,270 / 2%	68,000 / 17%	16,000 / 4%	10,000 / 2%	51,000 / 13%	53,144 / 13%
Roads only, low recreation emphasis	0	1,500 / 1%	1,400 / <1%	1,500 / <1%	400 / <1%	1,500 / <1%	1500 / <1%
Non-recreation emphasis (acres / %)							
Travel Management Designation¹³							
Designated Open (acres / %)	153,600 / 38%	0	0	0	0	0	0
Motorized use limited to existing roads and trails	95,000 / 24%	0	0	0	0	0	0
Designated Closed ¹⁴	6,550 / 2%	20,370 / 5%	75,960 / 19%	23,473 / 6%	48,016 / 12%	78,429 / 20%	93,776 / 23%
Motorized use limited to designated roads or designated roads and trails	80,500 / 20%	371,000 / 92%	213,234 / 53%	309,703 / 77%	247,185 / 61%	205,454 / 51%	268,712 / 67%
Motorized use limited to designated roads or designated roads and trails – seasonally	47,000 / 12% (15,400 / 4% closed depending on snow depth)	11,500 / 3%	89,133 / 22% (19,846 / 5% closed depending on snow depth)	65,094 / 16%	107,801 / 27%	113,928 / 28%	60,521 / 15%
Motorized use limited to existing roads and trails seasonally	4,600 / 1%	0	0	0	0	0	0
Land Ownership							
Z-1 (Retain) (acres / %)	206,201 / 51%	359,690 / 89%	357,598 / 89%	327,335 / 81%	322,693 / 80%	344,406 / 86%	323,931 / 80%
Z-2 (Retain, may exchange) (acres / %)	175,523 / 43%	23,082 / 6%	34,829 / 8%	57,488 / 14% ¹⁶	66,713 / 17%	39,693 / 10% ¹⁹	62,753 / 15%
Z-3 (Dispose) (acres / %)	15,422 / 4%	12,639 / 3%	7,456 / 2%	9,669 / 3%	7,821 / 2%	13,789 / 3%	15,186 / 4%
Community Expansion (acres / %)	5,617 / 1%	7,592 / 2%	3,121 / 1% ¹⁵	8,512 / 2% ¹⁷	5,776 / 1% ¹⁸	5,115 / 1% ²⁰	3,612 / 1% ²¹
Transportation and Utilities							
BLM Road designation (miles):	302	Same as 1	104	Same as 3	Same as 3	Same as 3	Same as 3
Collector	2,562	Same as 1	2,787	2,808	2,801	Same as 3	Same as 3
Local			Corridor btwn Redmond + Bend; no Quarry Ave link to Hwy 97	Combination of Alts 2 & 3	Combination of Alts 2 & 3	Combination of Alts 2 & 3	Combination of Alts 2 & 3
Regional transportation corridor	No corridor	Corridor btwn Redmond + Quarry Ave					

Issue Category	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Public Health and Safety							
Closed to all firearms discharge ²² (acres / %)	708 / <1%	4,657 / <1%	8,269 / 2%	8,296 / 2%	8,296 / 2%	6,289 / 2%	11,486 / 3%
Closed to firearms discharge unless legally hunting	3,646 / 1%	20,749 / 5%	121,398 / 30%	22,301 / 6%	110,075 / 27%	58,739 / 14%	83,121 / 21%

¹ All numbers in this table are approximate. All percentages are in relation to the approximately 404,000 acres of BLM-administered public land within the planning area, not in relation to all land in the planning area.

² Due to overlap of priority treatment areas, these categories will not add up to the total vegetation treatment acres.

³ Alternative 1 does not use the concepts of “primary, secondary, or general” for wildlife habitat emphasis. An area of B/LP RMP acres with management direction similar to that under the new “primary” designation was used to compare the alternatives.

⁴ Alternatives 3 and 4 include the Tumalo Canal ACEC in the proposed Juniper Woodlands ACEC.

⁵ The available acres are not 100% of the acres in the planning area; several thousand acres remain unavailable to grazing in all alternatives.

⁶ Allotments were counted as Open if any portion of the allotment remains Open in the alternative. Number of allotments counts La Pine unallotted as one.

⁷ RFA = reserve forage allotment (see text for description)

⁸ The “RFA or not available” column is a management discretion category.

⁹ This figure assumes the permittees voluntarily relinquish their permits. If they don’t, the figures would drop to 0 and “open” would increase correspondingly.

¹⁰ *ibid*

¹¹ *ibid*

¹² *ibid*

¹³ Acres do not reflect portions of the North Millican area or portions of trail systems that may be seasonally restricted, while other portions or areas of North Millican that would be open year-round.

¹⁴ Areas designated closed are closed to vehicles off of roads. In some closed areas, motorized use on roads is allowed.

¹⁵ Designation applies only to parks, green belts, and open spaces.

¹⁶ Exchanges must be for equitable habitat and recreational values; exchanges between large blocks near Bend/Redmond are for the purpose of blocking up or creating corridors between large blocks.

¹⁷ Proposed projects would include interconnecting open spaces.

¹⁸ *Ibid*.

¹⁹ Exchanges must be for equitable habitat and recreational values; exchanges between large blocks near Bend/Redmond are for the purpose of blocking up or creating corridors between large blocks.

²⁰ Designation applies only to parks, green belts, open spaces, open recreation spaces, and open community infrastructure needs.

²¹ Designation applies only to parks, green belts, open spaces, open recreation spaces, and open community infrastructure needs for the sawtooth area on Highway 97.

²² 290 of these acres include seasonal raptor closures.

Alternatives Considered in Detail

This section contains a brief description of each of the seven alternatives in terms of the key management direction and expected outcomes. It will also describe continued management direction that does not change by alternative (See also Appendix C), and management direction that is common to Alternatives 2-7. The continued management direction or “Management Direction Continued Management Direction” is presented to give the reader a sense of the guidance that is already in place that is not changed by the revision of the BL/P RMP.

Continued Management Direction

Generally, continued management direction reflects the baseline management conditions mandated by BLM policy and those portions of the B/LP RMP that are not revised by this RMP, but would be carried forward as management direction under all alternatives. These have been summarized below under each issue category and in Table 2-1, Comparison of Alternatives, and Appendix C, Management Guidance Continued in This Document. The Upper Deschutes Proposed Management Plan describes the objectives and guidelines for continuing management direction. No new withdrawals are being considered currently, so this is applicable to existing withdrawals.

Under each alternative the BLM, consistent with Executive Orders 13007 (1996) and 13084 (2000) and Secretarial orders 3175 and 3206, would take into account the comments, concerns, and interests of federally recognized Indian tribes prior to specific project proposals.”

Ecosystem Health and Diversity

Vegetation

Land Health Standards

The Standards for Rangeland Health (BLM, 1997) are considered to be the most current primary guidance for ecosystem management and serve to meet the intent of FLPMA and other relevant BLM policy concerning the management of vegetation, wildlife habitat, special status species, watersheds, and water quality.

The BLM would promote healthy sustainable rangeland, woodland, and forest ecosystems and accelerate restoration and improvement of public lands, as directed by the rangeland health regulations (43 CFR 4180). These regulations specify that the BLM shall assure the following:

- Watersheds are in, or are making significant progress toward properly functioning physical condition, including their upland, riparian-wetland, and aquatic components.
- Soil and plant conditions support infiltration, soil moisture storage and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and the timing and duration of flow.
- Ecological processes, including the hydrologic cycle, nutrient cycle, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.
- Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving, established BLM objectives such as meeting wildlife needs.
- Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal Proposed, Federal candidate and other BLM designated special status species.

Noxious Weeds

Due to the rapid expansion of noxious and other non-native weeds in portions of the planning area, all alternatives would emphasize maintaining noxious weed-free plant communities or restoring plant communities with noxious weed infestations through use of on-going broad-scale integrated weed management strategies. Efforts would also be made to control or manage other undesirable, non-native or invasive species.

Noxious weeds within the planning area are managed in conformance with “Vegetation Treatment on BLM-administered lands in Thirteen Western States” (1991) and the Prineville District Integrated Weed Management EA OR-053-3-062 (1994). These plans prescribe an integrated approach involving prevention, early detection, inventory, timely control (using biological, mechanical, manual, and chemical techniques), monitoring, and site rehabilitation. The selection of control methods is influenced by land management objectives, effectiveness of the control technique on the target species, size of the infestation, environmental concerns, land uses, and economics. BLM cooperates with county, state, and other federal agencies that have jurisdiction in or near the planning area.

Soil Productivity

Soils would be managed to maintain productivity and minimize erosion. Disturbed soil would be rehabilitated to blend into the surrounding soil surface and reseeded as necessary.

Riparian and Aquatics

Most fisheries guidance for stream reaches that fall within the Upper Deschutes plan area is provided in the Wild and Scenic River Management Plans. Other standards for riparian health are included in the Rangeland Health Standards (USDI BLM, 1997)

Wildlife

Consistent with the requirements of the Endangered Species Act (1973), all alternatives would ensure that actions are consistent with the conservation needs of special status species and would not contribute to the need to list special status species or jeopardize the continued existence of listed species. Where practical, the BLM would seek opportunities to conserve and improve special status species and habitats for native wildlife in the development of land use plans, activity plans, and in other BLM-authorized, funded, or approved activities (BLM Manual 6840- Special Status Species Management, Endangered Species Act).

To achieve this objective, the BLM would use habitat modification techniques such as mowing of shrubs, prescribed burning, planting, livestock grazing, and commercial and noncommercial cutting of trees to maintain or improve special status species habitat. The agency would also minimize disturbance actions to reduce negative effects to Special Status species during seasonally sensitive periods (i.e. breeding, nesting, winter roosting, etc.). Actions that could cause a disturbance would generally be managed using either year-round or seasonal restrictions, and/or distance buffers. Specific restrictions include, but are not limited to, human activities (such as recreation), range management, timber operations, and mining, which would not be allowed within ¼ to ½ half mile of active bald eagle nest sites and nearby perches from January 1 to August 31 (see Table 2-2, Seasonal Restriction and Distance Buffers, for a list of other species that may have required seasonal restrictions, seasonal restriction dates and distance buffers). Winter roosts would also be managed using seasonal restriction dates.

As directed in BLM Manual 6840-Special Status Species Management, all alternatives would take actions that progress toward the conditions indicating attainment of the Fundamentals of Rangeland Health (described in 43 CFR 4180.1) and associated

Standards (43 CFR 4180.2). Such actions would include management that restores, protects, or enhances habitats to support healthy, productive, and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate, and landform. The same techniques that apply to special status species habitat modification would also apply to native species habitat restoration or maintenance. A current inventory of wildlife species and resources would facilitate this on-going management and future planning needs, and would include systematic population inventories, as well as monitoring and evaluating known populations and habitats.

Continued Management Direction would be specific guidance for maintaining and restoring special habitat features that provide unique contributions to a variety of species. These features include, but are not limited to, caves, cliffs, and riparian habitats. For management direction of Pictograph Cave, some guidelines may vary, but all alternatives would continue seasonal closures during the winter hibernation period to protect Townsend's Big-Eared Bat.

Table 2-2 General Guidelines¹ for Seasonal Restriction and Distance Buffers

Species	Habitat	Spatial Buffer	Restriction Dates
Bald Eagle	Nest	¼ mile non-line of sight ½ mi line of sight 1.0 mile blasting	January 1 – August 31
	Winter Roosts	½ mile	December 1 – April 1
Golden Eagle	Nest	¼ to ½ mile	February 1 – August 31
Northern Goshawk	Nest	¼ mile	March 1 – August 31
Cooper's Hawk	Nest	¼ mile	March 1 – August 31
Sharp-shinned Hawk	Nest	¼ mile	March 1 – August 31
Ferruginous Hawk	Nest	½ mi direct line of sight ¼ mi with visual buffer	March 1 – August 1
R.T. Hawk	Nest	¼ mile	March 1 – August 31
Swainson's Hawk	Nest	¼ - ½ mile	April 1 – August 31
Peregrine Falcon	Nest	1.0 mile	January 1 – August 15
Prairie Falcon	Nest	¼ - ½ mile	March 15 – August 15
Osprey	Nest	¼ mile	March 1 – August 31
Burrowing Owl	Nest	¼ mile	March 1 – August 31
Flammulated owl	Nest	¼ mile	April 1 – September 30
Great Gray Owl	Nest	¼ mile	March 1 – July 31
Sage Grouse	Lekking	0.6 mile	March 1 st – May 15 * February 15– May 1
Sage Grouse	Nesting, Brooding and Rearing	NA	April 1 – July 31 *March 15– July 31
Sage Grouse	Winter Habitat	NA	November 15 – March 15 *November 1– March 31
Great Blue Heron	Nest	660 ft – ¼ mile	15 March – 15 July
Mule Deer	Winter Range	Variable	December 1 – April 30 *November 1 – May 1
Rocky Mountain Elk	Winter Range	Variable	December 1 – April 30 *December 1 – May 1
	Calving	N/A	May 15 – Jun 30
Pronghorn	Winter Range	Variable	December 1 – April 30 *November 1 – April 1
Townsend's Big-Eared Bat	Hibernaculum	N/A	November 1 – April 15
	Nursery	N/A	April 15 – October 31

* Millican Dates

¹ These general guidelines are only examples of typical restrictions. Specific dates and distances may vary depending on the type of action proposed, topography, habitat type, and the local breeding chronology of species or the local weather patterns.

Wildlife Emphasis Areas

There are some areas where wildlife would be managed with a primary emphasis under all action alternatives, although the methods to achieve them may vary. These areas include all of Badlands, Horse Ridge, and Smith Rock geographic areas and parts of Prineville Reservoir (Wild and Scenic River Corridor and Eagle Rock areas), Steamboat Rock (Wild and Scenic River and WSA), and Tumalo geographic areas. These areas together include approximately 70,442 acres³ or about 17% of wildlife habitats that are well distributed across the planning area.

In each geographic area, habitat modifications, improvements, and disturbance actions would be managed with specific attention to the species residing in each area. Key habitat components that would be emphasized would include: winter range, seasonal migration corridors, breeding sites, roosting sites, and foraging habitats adjacent to raptor nest sites.

A summary of the acres that are designated for in each geographic area as either primary, secondary, or general for each of the alternatives are displayed in Table 2 – 3 Wildlife Emphasis Areas – All Species Habitats. A summary of the acres in each geographic area and the acres of wildlife emphasis level (primary, secondary, or general) by important species are summarized in Tables 2-4 through 2-9 Wildlife Emphasis Areas by Species.

Habitat Modification

Vegetative habitats would be maintained or improved by reducing the amount of undesirable native and non-native plant species.

Disturbance Actions

In primary and secondary wildlife emphasis areas, human activities on BLM-administered lands would be managed to maintain functional wildlife migration or travel corridors where these functional habitats exist, given the surrounding land use conditions.

Hydrology

Executive Orders 11988 and 11990 and the Oregon-Washington Riparian Plan (1987) require that all alternatives include measures to protect or restore natural riparian functions. Management techniques would maintain or improve current good to excellent streambank stability and riparian vegetative condition. Riparian habitat needs would be considered in developing livestock grazing systems and pasture designs and would be evaluated according to the Fundamentals of Rangeland Health. Soils would also be managed to maintain productivity and to minimize erosion. Under all alternatives, allotments would be evaluated according to the Fundamentals of Rangeland Health to ensure water quality complies with State Standards and achieves, or is making significant progress toward achieving, established BLM objectives. Livestock grazing would be modified where the standard for watershed function is not being achieved, or where measurable progress is not being made toward achieving the standard.

The Environmental Protection Agency (EPA) delegated authority to Oregon DEQ to implement the Clean Water Act (CWA). The DEQ develops water quality standards, relating to the most sensitive beneficial uses of a particular water body, and applies these standards to determine whether or if waters are “impaired”. Impaired waters are considered water quality limited and are included on the State DEQ’s 303(d) list. This list becomes the basis for DEQ’s Total Maximum Daily Loads (TMDL). A TMDL is a written, quantitative plan and analysis for attaining and maintaining water quality standards for a specific water body and pollutant (40 CFR 130.2).

³Badlands-29,590 ac.; Horse Ridge-24,766 ac.; Prineville Reservoir-4,684 ac.; Smith Rock-2,110 ac.; Steamboat Rock-5,100 ac.; and Tumalo-4,192 ac.

Table 2 - 3 Wildlife Emphasis Areas - All Species Habitat

Geographic Area	Total Acres	Emphasis Level	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Badlands	29615	Primary	29615	29577	29616	29594	29612	29616	29604
		Secondary	0	12	0	2	2	0	12
		General	0	26	0	18	2	0	0
Bend/Redmond	42146	Primary	0	1326	1366	1326	1366	1367	1326
		Secondary	0	0	4146	0	7	9466	421
		General	42146	40820	36632	40820	40772	31312	40399
Cline Buttes	31864	Primary	0	1182	11563	1292	4278	0	0
		Secondary	0	593	0	3811	4108	593	4192
		General	31864	30089	20301	26761	23478	31271	27672
Horse Ridge	25167	Primary	25167	25164	25167	25163	25166	25165	25167
		Secondary	0	0	0	3	0	1	0
		General	0	3	0	0	0	0	0
La Pine	41191	Primary	0	7705	39526	7705	7705	39519	34773
		Secondary	33588	0	0	0	0	0	0
		General	7603	33486	1664	33486	33486	1672	6418
Mayfield Pond	27008	Primary	841	841	7546	7491	760	858	6352
		Secondary	6784	6784	19458	139	26245	6698	20659
		General	19383	19383	4	19378	11	19459	4
Millican Plateau	56283	Primary	0	3772	9548	11375	8481	6039	9118
		Secondary	15246	5	19730	1244	15	592	603
		General	41037	52506	27007	43666	47790	49654	46564
North Millican	54252	Primary	54252	1062	54164	386	4286	52203	54254
		Secondary	0	0	89	21124	49964	2052	0
		General	0	53190	0	32742	1	0	0
Prineville	11862	Primary	2673	2931	2931	4596	2093	6213	7008
		Secondary	0	8458	8930	4377	6862	5648	4612
		General	9189	473	0	2889	2907	0	241
Prineville Reservoir	39475	Primary	18981	4684	35289	29802	5252	35613	37119
		Secondary	0	5819	4187	52	30385	3864	2357
		General	20494	28972	0	9621	3840	0	0
Smith Rock	2119	Primary	2119	2119	2119	2119	2119	2119	2119
		Secondary	0	0	0	0	0	0	0
		General	0	0	0	0	0	0	0
South Millican	17687	Primary	17687	2	17687	17680	1425	200	17687
		Secondary	0	328	0	7	16262	3	0
		General	0	17357	0	0	0	17484	0
Northwest	6745	Primary	0	6745	6626	6626	6626	6745	6626
		Secondary	0	0	119	119	119	0	119
		General	6745	0	0	0	0	0	0
Steamboat Rock	12098	Primary	5100	6634	6957	7094	11825	6634	6957
		Secondary	0	0	0	0	0	0	0
		General	6998	5464	5140	5004	272	5464	5140
Tumalo	5808	Primary	4192	5808	5808	5808	5808	5808	5808
		Secondary	0	0	0	0	0	0	0
		General	1616	0	0	0	0	0	0
Total Acres	403320	Primary	160627	99552	255913	158057	116802	218099	243918
		Secondary	55618	21999	56659	30878	133969	28917	32975
		General	187075	281769	90748	214385	152559	156316	126438

Table 2 – 4 Wildlife Emphasis Areas - Mule Deer

Geographic Area	Total Acres	Acres of Mule Deer habitat	Emphasis Level	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Badlands	29615	29590	Primary	29590	29552	29590	29570	29588	29591	29579
			Secondary	0	12	0	2	2	0	12
			General	0	26	0	19	2	0	0
Cline Buttes	31864	15267	Primary	0	0	4778	0	201	0	0
			Secondary	0	593	0	593	1544	593	3515
			General	15267	14674	10489	14674	13522	14674	11752
Horse Ridge	25167	24769	Primary	24769	24766	24768	24765	24679	24767	24678
			Secondary	0	0	0	3	0	1	0
			General	0	3	0	0	0	0	0
Mayfield Pond	27008	1589	Primary	0	1	1588	1544	0	44	1040
			Secondary	0	1588	0	44	1591	1548	551
			General	1589	0	0	0	0	0	0
Millican Plateau	56283	52683	Primary	0	3772	8336	11375	8481	6039	9118
			Secondary	19726	5	19726	0	3	1	0
			General	32957	48904	24621	41307	44199	46642	43565
North Millican	54252	53766	Primary	53766	1062	53678	386	4286	51717	53767
			Secondary	0	0	89	21119	49479	2052	0
			General	0	52704	0	32262	1	0	0
Prineville	11862	8815	Primary	2673	1040	1040	2104	3815	3712	4311
			Secondary	0	7373	7775	4037	2093	5103	4263
			General	6142	402	0	2673	2907	0	0
Prineville Reservoir	39475	39475	Primary	18981	4684	35289	29802	5252	35613	37119
			Secondary	0	5819	4187	52	30385	3864	2357
			General	20494	28972	0	9622	3840	0	0
Smith Rock	2119	2110	Primary	2110	2110	2110	2110	2110	2110	2110
			Secondary	0	0	0	0	0	0	0
			General	0	0	0	0	0	0	0
South Millican	17687	17555	Primary	17555	2	17554	17547	1292	199	17554
			Secondary	0	301	0	7	16262	3	0
			General	0	17252	0	0	0	17352	0
Northwest	6745	6745	Primary	0	6745	6626	6626	6626	6745	6626
			Secondary	0	0	119	119	119	0	119
			General	6745	0	0	0	0	0	0
Steamboat Rock	12098	5352	Primary	5100	5100	5301	5301	5351	5110	5301
			Secondary	0	0	0	0	0	0	0
			General	252	252	50	50	0	252	50
Tumalo	5808	5792	Primary	4192	5792	5792	5792	5792	5792	5792
			Secondary	0	0	0	0	0	0	0
			General	1600	0	0	0	0	0	0
Total Acres	319983	263508	Primary	158736	84626	196450	136922	97473	171439	196995
			Secondary	19726	15691	31896	25976	101478	13165	10817
			General	85046	163189	35160	100607	64471	78920	55367

Table 2 - 5 Wildlife Emphasis Areas - Rocky Mountain Elk

Geographic Area	Total Acres	Acres of Elk habitat	Emphasis Level	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Badlands	29615	29615	Primary	29615	29577	29615	29594	29612	29616	29604
			Secondary	0	12	0	2	2	0	12
			General	0	26	0	18	2	0	0
Cline Buttes	31864	29157	Primary	0	319	8856	430	1570	0	0
			Secondary	0	593	0	1966	4108	593	4192
			General	29157	28245	20301	26719	23479	28564	24965
Horse Ridge	25167	5484	Primary	5484	5484	5484	5484	5484	5483	5483
			Secondary	0	0	0	0	0	1	0
			General	0	0	0	0	0	0	0
La Pine	41191	30708	Primary	0	3206	30708	3206	3206	30708	26504
			Secondary	0	0	0	0	0	0	0
			General	30708	27502	0	27500	27502	0	4204
Mayfield Pond	27008	439	Primary	0	0	439	428	0	11	3
			Secondary	0	439	0	11	441	430	438
			General	439	0	0	0	0	0	0
Millican Plateau	56283	15105	Primary	0	0	0	0	0	224	2207
			Secondary	0	0	15007	0	0	0	0
			General	15105	15105	98	15105	15105	14882	12898
North Millican	54252	34763	Primary	34763	673	34584	40	3408	33497	34674
			Secondary	0	0	89	11222	31264	1177	0
			General	0	34000	0	23412	1	0	0
Prineville	11862	939	Primary	0	34	34	34	761	761	761
			Secondary	0	905	905	408	0	179	179
			General	939	0	0	497	179	0	0
Prineville Reservoir	39475	11694	Primary	8320	1342	10298	9411	1	10274	11639
			Secondary	0	52	1393	52	10298	1417	52
			General	3374	10300	0	2191	1393	0	0
South Millican	17687	4834	Primary	0	0	4834	4834	0	0	4833
			Secondary	0	0	0	0	4834	3	0
			General	4834	4834	0	0	0	4831	0
Northwest	6745	6745	Primary	0	6745	6626	6620	6626	6745	6626
			Secondary	0	0	119	119	119	0	119
			General	6745	0	0	0	0	0	0
Steamboat Rock	12098	4971	Primary	4284	4284	4421	4422	4971	4284	4421
			Secondary	0	0	0	0	0	0	0
			General	687	687	549	549	0	687	549
Tumalo	5808	5808	Primary	4192	5808	5808	5808	5808	5808	5808
			Secondary	0	0	0	0	0	0	0
			General	1616	0	0	0	0	0	0
Total Acres	359055	180262	Primary	86658	57472	141707	70311	61447	127411	132563
			Secondary	0	2001	17513	13780	51066	3800	4992
			General	93604	120699	20948	95991	67661	48964	42616

Table 2 - 6 Wildlife Emphasis Areas - Golden Eagle

Geographic Area	Total Acres	Acres of Golden Eagle habitat	Emphasis Level	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Bend/ Redmond	42146	128	Primary	0	0	0	0	0	0	0
			Secondary	0	0	0	0	0	128	128
			General	128	128	128	128	128	0	0
Cline Buttes	31864	5404	Primary	1685	782	3455	782	1796	0	1796
			Secondary	0	44	0	1058	44	44	1659
			General	3719	4578	1949	3564	3564	5360	1949
Horse Ridge	25167	2159	Primary	502	2158	2158	2157	2158	2158	2158
			Secondary	0	0	0	1	1	1	1
			General	1657	1	1	0	0	0	0
Millican Plateau	56283	9505	Primary	978	1714	3714	3811	3178	3114	3114
			Secondary	0	0	672	538	0	534	534
			General	8527	7791	5119	5156	6327	5858	5858
North Millican	54252	4861	Primary	2667	1	4812	6	784	4846	4860
			Secondary	0	0	48	2009	4075	15	0
			General	2194	4860	0	2845	1	0	0
Prineville	11862	1929	Primary	596	868	868	1363	1402	1605	1605
			Secondary	0	859	1061	254	526	324	324
			General	1333	202	0	312	0	0	0
Prineville Reservoir	39475	7061	Primary	3634	1994	7061	6945	2108	7062	7062
			Secondary	0	1755	0	0	4955	0	0
			General	3427	3312	0	117	0	0	0
Smith Rock	2119	997	Primary	228	997	997	997	997	997	997
			Secondary	0	0	0	0	0	0	0
			General	769	0	0	0	0	0	0
South Millican	17687	513	Primary	0	0	513	511	2	2	513
			Secondary	0	0	0	2	511	0	0
			General	513	513	0	0	0	511	0
Northwest	6745	1038	Primary	1038	1038	1038	1038	1038	1038	1038
			Secondary	0	0	0	0	0	0	0
			General	0	0	0	0	0	0	0
Steamboat Rock	12098	4304	Primary	3950	3693	3950	3981	4267	3693	3950
			Secondary	0	0	0	0	0	0	0
			General	354	611	354	323	38	611	354
Tumalo	5808	2068	Primary	925	2068	2068	2068	2068	2068	2068
			Secondary	0	0	0	0	0	0	0
			General	1143	0	0	0	0	0	0
Total Acres	305506	39967	Primary	16203	15313	30634	23659	19798	26583	29161
			Secondary	0	2658	1781	3862	10112	1046	2646
			General	23764	21996	7551	12445	10058	12340	8161

Table 2 - 7 Wildlife Emphasis Areas - Pronghorn

Geographic Area	Total Acres	Acres of Pronghorn Habitat	Emphasis Level	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Badlands	29615	9379	Primary	9379	9367	9378	9379	9380	9380	9368
			Secondary	0	12	0	0	0	0	12
			General	0	0	0	0	0	0	0
Bend/ Redmond	42146	25948	Primary	0	0	0	0	0	0	0
			Secondary	0	0	4144	0	8	1465	9
			General	25948	25948	21802	25948	25941	24484	25939
Horse Ridge	25167	19385	Primary	19385	19385	19384	19384	19385	19383	19384
			Secondary	0	0	0	0	0	1	0
			General	0	0	0	0	0	0	0
Mayfield	27008	24689	Primary	19090	38	5563	5468	0	98	4369
			Secondary	38	5561	19123	137	24687	5475	20324
			General	5561	19090	3	19085	10	19124	4
Millican Plateau	56283	41235	Primary	0	1798	3810	5699	2786	1855	1860
			Secondary	0	0	10493	1203	12	551	563
			General	41235	39437	26932	34333	38438	38830	38813
North Millican	54252	24519	Primary	0	446	24520	40	246	24519	24520
			Secondary	0	0	0	1718	24274	2	0
			General	24519	24073	0	22761	0	0	0
Prineville	11862	3130	Primary	0	396	396	435	1151	396	0
			Secondary	0	2380	2735	2570	241	2735	2890
			General	3130	354	0	126	1739	0	241
Prineville Reservoir	39475	1552	Primary	0	0	0	0	0	0	0
			Secondary	0	1552	1552	0	0	1552	1552
			General	1552	0	0	1552	1552	0	0
South Millican	17687	17341	Primary	17341	2	17341	17341	1259	29	17341
			Secondary	0	328	0	0	16082	3	0
			General	0	17011	0	0	0	17310	0
Total Acres	303495	167178	Primary	65195	31432	80392	57746	34207	55660	76842
			Secondary	38	9833	38047	5628	65304	11784	25350
			General	101945	125913	48737	103805	67680	99748	64997

Table 2-8 Wildlife Emphasis Areas - Sage Grouse

Geographic Area	Total Acres in Geographic Area	Acres of Sage Grouse habitat	Emphasis Level	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Horse Ridge	25167	14356	Primary	14355	14355	14356	14355	14356	14356	14356
			Secondary	0	0	0	1	0	0	0
			General	1	1	0	0	0	0	0
Millican Plateau	56283	1943	Primary	1943	0	0	0	0	1943	1943
			Secondary	0	0	1943	0	0	0	0
			General	0	1943	0	1943	1943	0	0
North Millican	54252	44413	Primary	44413	1060	44413	384	1243	43219	44412
			Secondary	0	0	0	15089	43169	1195	0
			General	0	43353	0	28938	0	0	0
Prineville Reservoir	39475	19	Primary	19	0	19	19	19	19	19
			Secondary	0	19	0	0	0	0	0
			General	0	0	0	0	0	0	0
South Millican	17687	16872	Primary	16872	1	16871	16864	277	35	16871
			Secondary	0	249	0	7	16593	0	0
			General	0	16622	0	0	0	16836	0
TOTAL	192864	77603	Primary	77602	15416	75659	31622	15895	59572	77601
			Secondary	0	268	1943	15097	59762	1195	0
			General	1	61919	0	30881	1943	16836	0

Table 2-9 Migration and Connectivity

Species	Geographic Area	Total Acres in Geographic Area	Migration/Connectivity Acres	Emphasis Level	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	
Deer	La Pine	41191	40643	Primary	33657	7449	38979	7449	7449	38971.2	34225.2	
				Secondary	0	0	0	0	0	0	0	
				General	6986	33194	1664	33194	33194	1671.9	6417.9	
Pronghorn	Badlands	29615	1789.8	Primary	1777	1777	1790	1789	1789	1790	1778	
				Secondary	11.8	11.8	0	0	0	0	0	11.8
				General	1	1	0	1	1	0	0	
Pronghorn	Mayfield	27008	4923.4	Primary	0	37.7	3396.2	3395	0	0	3013.7	
				Secondary	0	3407	1515.2	39	4911.3	3395	1897.6	
				General	4911.4	1478.7	0	1477.4	0	1516.4	0	
Pronghorn	Millican Plateau	56283	9856.5	Primary	0	22	115.5	0	22	243	3221	
				Secondary	0	0	8708.3	1123.4	12.5	470.8	483	
				General	9856.5	9834.5	30.6	8733	9822.3	9142.6	6058.4	
Pronghorn	North Millican	54252	4039	Primary	0	0	3950	0	0	4039	4039	
				Secondary	4039	0	89	1205.3	4038.7	0	0	
				General	0	4039	0	2833	1.2	0	0	
Pronghorn	Research Nat. Area	N/A	510	Primary	510	510	510.2	510.2	510.2	510.2	510.2	
				Secondary	0	0	0	0	0	0	0	
				General	0	0	0	0	0	0	0	
Subtotals for Pronghorn		167158	21118.7	Primary	2287	2346.7	10761.9	5694.2	2321.2	6582.2	12561.9	
				Secondary	4050.8	3418.8	10312.5	2367.7	8962.5	3865.8	2392.4	
				General	14768.9	15353.2	30.6	13044.4	9824.5	10659	6058.4	
Elk	Prineville	11862	67.5	Primary	0	0	0	0	0	0	0	
				Secondary	67.5	67.5	67.5	67.5	0	67.5	67.5	
				General	0	0	0	0	0	0	0	
Elk	Prineville Reservoir	39475	8121.8	Primary	0	1341.7	6729	5841.5	1.3	6704.4	8070	
				Secondary	7000	51.8	1393.6	51.8	6728.2	1417.3	51.8	
				General	1122.6	6728.3	0	2228.6	1393.4	0	0	
Subtotals for Elk		51337	8189.3	Primary	0	1341.7	6729	5841.5	1.3	6704.4	8070	
				Secondary	7067.5	119.3	1461.1	119.3	6728.2	1484.8	119.3	
				General	1122.6	6728.3	0	2228.6	1460.9	0	0	
Total Acres		69951		Primary	35944	11137.4	56469.9	18984.7	9771.5	52257.8	54857.1	
				Secondary	11118.3	3538.1	11773.6	2487	15690.7	5350.6	2511.7	
				General	22877.5	55275.5	1694.6	48467	44479.4	12330.9	12476.3	

In Oregon, DEQ recognizes the BLM as a Designated Management Agency (DMA) under the CWA with responsibility for protecting water quality on federal lands within its jurisdiction. Primary water quality issues relating to BLM management are specific to non-point source pollution. Non-point source pollution is best controlled or eliminated through the development, adoption, and implementation of BMPs. BMPs are defined under the EPA Water Quality Planning and Management as “methods, measures or practices selected by an agency to meet its non-point source control needs”. BMPs include but are not limited to structural and non-structural controls, and operation and maintenance procedures. BMPs can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (40 CFR 130.2).

The Forest Service and BLM Protocol for Addressing Clean Water Act Section 303(d) Listed Waters (Protocol) (USDA, 1999) that was developed in coordination with EPA and DEQ, provide the vehicle for BLM compliance with the CWA. According to the Protocol, the primary mechanism for addressing water quality limited water bodies on public lands is through the development and implementation of Water Quality Restoration Plans (WQRP). The WQRP outlines the management, including BMPs, to progress towards attainment of water quality standards and provide for designated beneficial uses of the water body. The BLM would take actions relative to listed water bodies in accordance with the protocol. Management activities including grazing, mining, recreation, timber harvest, and restoration would be designed for healthy, sustainable, and functional riparian and rangeland ecosystems. WQRPs may be developed before, during, or after a TMDL, and are intended to support Oregon DEQ’s development and implementation of the TMDL process.

Existing water quality would be maintained or enhanced consistent with or exceeding Oregon’s water quality standards. The BLM would participate as appropriate with Oregon DEQ and the Oregon Department of Agriculture (ODA) in the development and implementation of TMDLs, Water Quality Management Plans (WQMP), and ODA Agricultural Water Quality Management Plans.

Fire/Fuels Management

The Brothers/La Pine planning area was evaluated for damage to resource values by fire. Values at risk classes have been determined for the planning area and range from the lowest values at risk (Class 1) to the highest values at risk (Class 6, special consideration values at risk). Values at risk are the basis for determining fire suppression action. In addition, the Bear Creek Fire Use Plan (1983) provides for conditional suppression actions on approximately 107,000 acres in the Bear Creek Watershed.

Low-Moderate Risk Classes

Alternative 1 would allow for prescribed fire⁴ to manage vegetation and habitat in low-moderate risk classes (1-3). The Interim Management Policy and Guidelines for Lands under Wilderness Review provides suppression guidelines for Wilderness Study Areas in the Planning Area (H – 8550-1, 7/5/95).

- Depending on circumstances, unplanned ignitions in fire risk classes 1-3 would be managed as prescribed fire, as long as the fire behavior falls within the conditional fire suppression parameters regarding size, air temperature, wind speed, flame length, etc.
- Prescribed fire would be carried out in accordance with approved fire management plans and appropriate smoke management and visibility goals and objectives.

⁴Prescribed fire refers not only to planned ignitions, but also unplanned ignitions that are allowed to burn under specific conditions. While not a “let-burn” policy, conditional fire areas have been designated as areas to allow a fire to continue burning under specific behavior parameters, such as rate of spread and air temperature. In the event that an unplanned ignition moves outside of condition fire prescription, aggressive suppression measures would be taken.

Moderate-High Risk Classes

Unplanned ignitions in this risk class (4 – 6) would be aggressively suppressed.

- Rural or urban areas between high value public lands, particularly La Pine, Bend, Redmond, and Prineville areas, would be managed as top suppression areas. The interface areas are of special concern because of housing developments and adjacent high resource values.
- A timely post-burn review and evaluation in order to define any rehabilitation needs would be conducted.

Bear Creek Watershed

- Unplanned ignitions would burn under prescribed conditions, as long as District suppression forces are available to monitor and implement control actions as needed.
- Range developments would be protected.
- A maximum of four fires greater than 150 acres in size would be allowed to burn under prescribed conditions at any time.

Air Quality

No actions taken by BLM in implementation of the Upper Deschutes RMP Revision would engage in, support, provide financial assistance for, or license, permit or approve any activity that does not conform to the Oregon Smoke Management Plan, a companion to the Oregon State Implementation Plan. Management direction Continued Management Direction would meet the national ambient air quality standards (NAAQS) as described in the Clean Air Act (CAA).

Special Management Areas

Special Management Areas (SMAs) within the Upper Deschutes Resource Management Plan area include Areas of Critical Environmental Concern (ACEC), Research Natural Areas (RNA), Wilderness Study Areas (WSA), Wild and Scenic Rivers (WSR), and caves. Each of these areas has special management direction that reflects the values for which each of these areas or sites are designated. Each of the Wild and Scenic Rivers (Lower Crooked River and Middle Deschutes) within the planning area boundary remain as managed in their respective WSR plans that were prepared since the adoption of the B/LP RMP. However, certain specific required management direction (travel management allocations and visual resource management classes) have been adopted in the UDRMP for these areas. Some SMA designations may overlap. For example both the Horse Ridge and Powell Butte RNAs are also designated ACECs and a portion of the Badlands WSA is also designated as an ACEC. See DEIS Map 7 for locations of Special Management Areas and the alternatives under which each is designated.

Areas of Critical Environmental Concern (ACECs)

Unless specifically addressed in other guidance, uses that do not impair the values for which the ACEC was designated would be allowed to continue.

Horse Ridge (RNA), Peck's Milkvetch (ACEC), Powell Butte (RNA) and Wagon Roads (ACEC), and a portion of the Badlands WSA would continue as designated ACECs. The management guidelines and size of each ACEC may change by UDRMP alternative. (See B/LP RMP pages 52 – 72 for specific allowable uses and guidelines outlined for each ACEC). Acres shown below for individual ACECs are based on new estimates obtained from GIS technology. A total of approximately 24,543 acres designated ACEC in the B/LP RMP would not be changed by this RMP.

For all ACECs, including those additionally designated as RNAs, BLM would increase public awareness of these areas. This would include, but not be limited to improved boundary marking, publication of management guidelines, and reasons for designation.

Badlands ACEC (16,684 acres)

The ACEC designation of the core Badlands area would continue in order to provide for the protection of geologic formations and old-growth juniper woodlands if the area is released from WSA designation for other uses by Congress.

General: See Badlands WSA in this section. If the Badlands is released from WSA designation for other uses by Congress, allocations/allowable uses and guidelines for the Badlands WSA would apply to the Badlands ACEC except that the closure to mineral leasing would change to a closure to surface occupancy within the ACEC.

Peck's Milkvetch ACEC (4,073 acres)

The designation of the existing Peck's Milkvetch ACEC (4,073 acres) would be continued to emphasize and protect populations of Peck's Milkvetch, a plant listed as Threatened by the State of Oregon. Land uses, recreation, and other activities that would adversely affect Peck's Milkvetch or its habitat would be prohibited or restricted in a way that does not impair populations or habitat of this special status plant. A detailed management plan for the area would be completed which would specify the management required for Peck's Milkvetch.

Fire Management: Management direction would be common to Alternatives 2-7.

Vegetative Treatments: Treatments designed to maintain or enhance Peck's Milkvetch populations or its habitat would be allowed. Firewood harvest would not be allowed.

Special Forest and Range Products: Generally, harvesting of wood products and special forest and range products would not be allowed except in conjunction with restoration treatments or if it is consistent with the values of this ACEC.

Minerals: Mineral material mining, development of mining claims, and geophysical exploration would be restricted to not impair the special values of this ACEC. Approved plans of operation would have stipulations designed to prevent impairment of special values. Surface occupancy for fluid mineral leasing would not be allowed. See ACECs under Common to Alternatives 2-7 for rockhounding and decorative stone.

Livestock Grazing: No restrictions specific to this ACEC (see Livestock Grazing sections).

Recreation: No restrictions specific to this ACEC (see Recreation sections).

Firearm Discharge: No restrictions specific to this ACEC (see Public Health and Safety sections).

Wagon Roads ACEC (90 acres)

Huntington Road was a mid 19th century military route between the Dalles and Fort Klamath (Klamath Falls). The integrity and interpretive resources of the segment of the historic Huntington Road (Wagon Roads ACEC) located in Township 17, Range 12, Section 1 (see DEIS Map 7, Special Management Areas) would continue to be highlighted and protected. This 1.25-mile segment covers 90 acres, including a 300-foot buffer on either side to protect associated historic features.

Fire Management: wildfire would be fought aggressively if fire was within or threatening the ACEC. Fire lines would not be constructed within the ACEC and surface disturbance would be kept to the minimum amount necessary. Prescribed fire would not be allowed.

Vegetation Treatments: Management direction would be Common to Alternatives 2-7.

Special Forest and Range Products: Firewood cutting would not be allowed.

Livestock Grazing: Livestock grazing and associated developments would be allowed so long as livestock do not concentrate in the ACEC and developments do not impair the values for which the ACEC was designated.

Minerals: Development of mining claims and geophysical exploration would be allowed with restrictions designed to prevent impairment of archeological and interpretive

values. Mining for mineral materials would not be allowed. See ACECs under Alternatives 2-7 for rockhounding and decorative stone collection.

Recreation: All forms of non-motorized primitive recreation would be allowed except for horseback riding and non-motorized vehicle use along the road alignment south of McGrath road. OHV use along the historic road south of McGrath Road would not be allowed.

Rights of Way: New rights of way would not be granted.

Research Natural Areas (RNAs)

All alternatives would continue to provide components of the national system of RNAs. The Oregon Natural Heritage Act calls for the establishment of a “discrete and limited system” of natural heritage conservation areas, which have “substantially retained their natural character” and which “represent the full range of Oregon’s natural heritage resources.” The Horse Ridge RNA provides representation of the western juniper/big sagebrush/threadleaf sedge community and the Powell Butte RNA represents the juniper/big sagebrush/bluebunch wheatgrass and juniper/bunchgrass communities.

The Horse Ridge ACEC/RNA Natural Area Management Plan (April 1996) established two objectives: (1) to maintain the natural condition of the western juniper/big sagebrush/threadleaf sedge community; and (2) to encourage use of the Natural Area for scientific research and college-level educational opportunities in a manner which will not degrade the natural ecological conditions or processes.

The Horse Ridge RNA is also an Instant Study Area (ISA). In addition to the management plan, Horse Ridge RNA/ISA is managed under the 1995 “Interim Management Policy for Lands under Wilderness Review” (IMP), which provides non-impairment standards for management.

A detailed management plan for the Powell Butte RNA remains to be completed which would specify the management required for the plant communities represented by this natural area.

RNA Areas: Horse Ridge RNA/ISA – 609 acres; Powell Butte RNA – 510 acres.

Fire Management: Consistent with the District Fire Management Plan, prescribed fire would be allowed as well as suppression activities, providing restrictions or stipulations are designed to maintain or enhance natural vegetation communities. Fire management direction provided in the Horse Ridge ACEC/RNA Natural Area Management Plan (1996) would continue to apply.

Vegetative Treatments: See the Horse Ridge ACEC/RNA Natural Area Management Plan (1996) for management direction.

Special Forest and Range Products: Harvesting of wood products and special forest and range products would not be allowed. See the Horse Ridge ACEC/RNA Natural Area Management Plan (1996) for additional management direction.

Livestock Grazing: Livestock grazing would not be allowed.

Minerals: Plans of operation must be submitted and approved prior to the development of mining claims in the Powell Butte RNA. Approved plans of operation would have stipulations to protect the values of this RNA. The Horse Ridge RNA is withdrawn from locatable mineral entry under the 1872 mining laws as amended. Surface occupancy for fluid mineral leasing would not be allowed. Geophysical exploration would be restricted to protect the plant communities for which the RNAs are designated. Rockhounding and the collection of decorative stone would not be allowed.

Recreation: Motorized use would not be allowed.

Rights-of-Way: New rights of way would not be granted.

Wilderness Study Areas

Under all alternatives, WSAs and Instant Study Areas (ISAs; i.e., Horse Ridge ACEC/RNA) would be managed to maintain wilderness suitability consistent with the 1995 IMP for lands under wilderness review. There are two WSAs in the planning area, Badlands and Steelhead Falls. These areas will continue to have WSA designation until Congress determines designates these lands as wilderness or releases them for other purposes.

Badlands WSA (32,221 acres)

The Badlands WSA would be managed to provide primitive recreation opportunities, maintain wilderness suitability consistent with the IMP, and protect geologic formations, a prehistoric river canyon, pictographs, and old-growth juniper woodlands. Land uses, recreation, and other activities that would impair geologic formations, old growth juniper or its habitat, or wilderness suitability would be prohibited or restricted in a way that maintains or enhances wilderness suitability. If the Badlands WSA is released from WSA designation by Congress, the management direction for the Badlands ACEC would apply.

Fire Management: Prescribed fire and suppression activities would continue be allowed consistent with the District Fire Management Plan and consistent with the non-impairment standard of the IMP.

Vegetative Treatments: Treatments would be allowed within the non-impairment standard of the IMP.

Forest/Range Products: Generally, harvesting of wood products and special forest and range products would not be allowed except in conjunction with restoration treatments.

Minerals: Development of mining claims and geophysical exploration would continue to be allowed with restrictions designed to prevent impairment of wilderness suitability. Approved plans of operation must meet the non-impairment standard of the IMP. The WSA designation closes the area to mineral leasing. If Congress determines that the WSA is not suitable for wilderness, mineral leasing would be allowed in the Badlands ACEC but a “no surface occupancy” stipulation would apply. Decorative stone collection would continue to not be allowed (no continued management direction for rockhounding).

Livestock Grazing: Livestock grazing would be managed according to the non-impairment standards of the IMP.

Recreation: No restrictions specific to this WSA (see Recreation under Continued Management Direction).

Firearm Discharge: The area within ¼ mile of Badlands Rock would be closed to all firearm discharge seasonally.

Rights-of-Way: New rights-of-way would not be granted.

Land Ownership: Any inholdings that are acquired within the WSA would be managed in a manner similar to the surrounding WSA.

Steelhead Falls WSA

Continued management direction for the Steelhead Falls WSA is provided in the Middle Deschutes/Lower Crooked Rivers’ Management Plan.

Wild and Scenic Rivers

The Lower Crooked (Chimney Rock Segment) Wild and Scenic River, the Lower Crooked Wild and Scenic River, the Middle Deschutes Wild and Scenic River, and the Upper Deschutes Wild and Scenic River would continue to be managed under existing Wild and Scenic River management plans.

Caves

Caves nominated for significance or determined significant would be managed with an emphasis on educational, research, and protection of cave resources. Under all alternatives, land uses, recreation, and other activities would be managed to prevent impairment of the nominated values for which the cave may be determined significant.

Three caves have been determined to be significant under Federal Caves Resource Protection ACT (FCRPA) in the planning area. The Horse Butte Indian Cave, Pictograph (Stout) Cave and the Redmond Caves were determined to be Significant in 1995.

All remaining caves that have been nominated for Significant cave status will be reviewed and a determination will be made on whether they qualify as a significant cave.

Land Uses

Livestock Grazing

General Guidance & ACEC Guidance

All alternatives would provide for continued livestock grazing, while reducing conflicts with and meeting needs of other uses and resources.

Per 43 CFR 4180.2, where livestock grazing is found to be a significant factor in not achieving Standards for Rangeland Health, actions to control intensity, duration, and timing of grazing and/or provide for periodic deferment and/or exclusion would be required to meet physiological requirements of key plant species and to meet other resource objectives. Upon determining that existing grazing management practices on public land are significantly contributing to the non-attainment of resource objectives, appropriate actions would be implemented.

The level of Animal Unit Months (AUMs, see acronym list) of specified grazing use in the alternatives is based on the average authorized AUMs using the years 1990, 1995, and 2000, compared to active preference AUMs. However, livestock permittees have the option to license up to their full active preference (displayed in Appendix G) for any given year. Total active preference for the planning area is 38,726 AUMs under B/LP RMP direction (or 22,612 AUMs under the current situation; see further explanation in Chapter 4). Permittees seldom use their full active preference for a variety of reasons; including previous agreements with BLM, management prescriptions in implemented AMPs, economic factors, and forage and water availability.

All areas currently closed to livestock grazing would stay closed, including the Horse Ridge and Powell Butte RNAs and areas not within an allotment in the northern planning area.

Allotment Evaluation and Management

Monitoring studies and allotment evaluations would be done on a schedule as outlined in the Oregon Rangeland Monitoring Handbook (H-1734-2). Current direction is to perform an allotment evaluation every 5 years for I category allotments and every 10 years for M category allotments (see description of allotment categorization process in Chapter 3). The C category allotments would be monitored and evaluated as needed. Monitoring studies include recording actual use; forage utilization; soil stability; trends in vegetative density, cover, and composition; and ecological site inventory data. During allotment evaluations, interdisciplinary teams review monitoring information and examine and propose changes to allotment goals, forage allocation, allotment category, and grazing systems.

In 1997, the Standards for Rangeland Health and Guidelines for Grazing Management (USDI BLM, 1997) were adopted by the BLM and incorporated into existing plans. The Standards meet the intent of 43 CFR 4180 (rangeland health regulations), which contain the objectives to "...promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions... and to provide for the sustainability of the western livestock industry and communities that are dependent upon healthy, productive public rangelands."

The Standards are the basis for assessing and monitoring rangeland conditions and trend. The assessments evaluate the standards and are conducted by an interdisciplinary team with participation from permittees and other interested parties. The complete “Standards for Rangeland Health and Guidelines for Livestock Grazing Management” can be found at <http://www.or.blm.gov/Resources/Rangelands/s-gfinal.htm>. See Management Category C1 in Appendix G for status of these assessments.

If livestock are significantly contributing to the non attainment of a standard, or management does not conform with the guidelines, management would be implemented to ensure that significant progress is being made toward attainment of the standard(s), and /or conformance with the guidelines according to 43 CFR 4180.

The Prineville District BLM expects to complete rangeland health assessments (per direction in 43 CFR 4180 and Standards for Rangeland Health) on all District allotments by 2008.

Allotment Management Plans (AMPs) are sometimes developed for larger I or M category allotments. An AMP prescribes the manner and extent that livestock grazing is conducted to meet multiple uses, sustained yield, economic, and other objectives. A grazing system is generally incorporated into the plan. An AMP is implemented when it is incorporated into the permit and accepted by the permittee and is operational when supporting range improvements and the grazing system have been initiated.

Rangeland Developments

Rangeland developments are proposed as part of the allotment evaluation process, and as a result of other reviews, to assist in attaining resource management goals. Various rangeland developments have been implemented to provide livestock forage, improve livestock distribution, improve rangeland health, improve soil stability, improve wildlife habitats, improve wildlife/livestock forage, and to restrict livestock from certain areas. As mandated in FLPMA and PRIA, a portion of the grazing fees is invested in range developments with the expectation that these projects may benefit wildlife, watersheds, and livestock producers. Livestock operators, state and Federal agencies, and other interested public entities have continued to fund rangeland improvement construction.

Forage Allocation

The B/LP RMP directed that 6,800 AUMs on scattered parcels in the La Pine area (shown in Appendix G as Allotment #9999) be added to existing allotments or used to create new allotments (see Allocated Forage AUMs in un-allotted areas, in Table 14 on p. 85 in B/LP RMP). The action would be carried forth in all alternatives where the areas in question remain available for grazing use. The B/LP RMP listed construction of 98 miles of fence and 31 waterholes to accomplish this.

Minerals

General

Under all alternatives, leasable, saleable and locatable mineral prospecting, exploration, and development on BLM-administered lands would be allowed, while protecting other land values. Public lands open to mineral uses may be explored and developed for mineral resources in accordance with the 43 CFR 3000 through 3800:

- Where not withdrawn from mineral entry or otherwise closed to the development of mineral resources;
- In a manner that would not cause unnecessary or undue degradation of the landscape; and

- In a manner consistent with applicable land use plans and Federal and state laws with respect to (1) air and water quality, (2) noise, (3) solid and liquid waste disposal, (4) fisheries, wildlife, and plant habitat, and (5) cultural and paleontological resources.

All alternatives would also allow for the following activities:

- 403,910 acres are available for locatable mineral entry under the 1872 mining laws.
- 374,365 acres are available for mineral leasing.
- All surface disturbances resulting from mineral operations, including disturbances resulting from casual use and operations under a notice or plan must be reclaimed. Reclamation shall include but is not limited to:
 1. Saving of topsoil for final application after reshaping of disturbed areas has been completed;
 2. Measures to control erosion, landslides, and water runoff, and the spread of noxious weeds;
 3. Measures to isolate, remove, or control toxic materials;
 4. Reshaping of the area disturbed, application of the topsoil, and re-vegetation of the disturbed areas, where reasonably practical; and
 5. Rehabilitation of fisheries and wildlife habitat.
- Surface occupancy for fluid mineral leasing is not allowed on 16,480 acres surrounding Prineville Reservoir.
- All reserved federal mineral estate (federally owned minerals in non-federally owned lands) would remain open to mineral exploration and development.

Coal, coal bed methane, oil shale, and tar sands are considered absent from the planning area and are not addressed in this RMP.

Rockhounding

Public lands would be made available for recreational rock collecting consistent with the FLMPA requirements for outdoor recreation opportunities while protecting (1) the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water, and archeological values; (2) preserving and protecting public lands in their natural condition, where appropriate; (3) and providing food and habitat for fish, wildlife, and domestic animals. The collection of rocks, invertebrate fossils and mineral specimens including petrified wood would be allowed in reasonable amounts for non-commercial use only. Any commercial use would require a permit. Collection of petrified wood without charge is restricted to 25 pounds plus one piece per person per day and may not exceed 250 pounds per year. Quotas from multiple persons may not be pooled to remove pieces larger than 250 pounds. No petrified wood specimen weighing more than 250 pounds shall be removed without a permit from the authorized officer and no person shall use explosives or mechanical devices (except metal detectors) to aid in the collection of rock materials.

The North Ochoco Reservoir, Eagle Rock, and the portion of the Fischer Canyon site east of Highway 27 would continue to be managed for rockhounding uses.

Forest, Woodland, and Range Products

In accordance with FLPMA, forests and woodlands would be managed to provide for social and economic values, including wood products that are consistent with ecosystem sustainability and management objectives.

Approximately 41,110 acres of commercial forestland in the La Pine block and approximately 1,080 acres of commercial forestland in the northern area would be managed in a sustainable manner to ensure the availability of forest products in perpetuity for social/economic needs. The harvest of up to 2,000 cords of firewood and other wood products from the approximately 170,000 acres of juniper woodlands within the planning area would be allowed per year.

As a condition of the conveyance of 1,768 acres within La Pine State Park to the Oregon Parks and Recreation Department, BLM retained title to all present and future vegetative resources on these parcels. To this end, vegetation management actions would be designed to help the goals and objectives of the Oregon Parks and Recreation Department.

Military Uses

Public Lands, excepting those withdrawn, within the designated training areas, would be open to and shared with the public except when OMD and the BLM agree that the security of OMD resources or public and/or OMD personnel safety would be at risk as a result or the intermingling of military and civilian activities. OMD would provide BLM with a quarterly training summary. Military use would be reviewed by BLM and OMD staff on a yearly basis. OMD would be responsible for mitigation or restoration of BLM managed resources within the training area.

All alternatives would ensure consistency of planned and approved military training activities with environmental requirements, integrated resource management plans, and conflict resolution with neighbors on and adjacent to public lands.

All military activity would be consistent with direction provided by the following documents and references cited therein:

- Oregon Military Department, Salem Oregon, March 1995, Environmental Assessment: Fielding the Bradley Fighting Vehicle and Cavalry Fighting Vehicle and Other Proposed Federal Actions at the Central Oregon Training Site by the Oregon National Guard.
- Oregon Military Department, Salem Oregon, October 2001, Biak Training Center Integrated Natural Resources Management Plan and Environmental Assessment (INRMP). INRMP is on file with BLM Prineville District.
- Oregon Military Department, Salem Oregon, March 15, 2002, Integrated Cultural Resources Management Plan for the Oregon Army National Guard (ICRMP), report number 198. ICRMP on file with BLM Prineville District.

Visual Resources

The Brothers Grazing Management Program EIS (1982) established VRM Class designations for the planning area, which were brought forward into the Brothers/La Pine RMP (1989). All alternatives would apply the following VRM classes to guide the management of scenic resources:

- VRM Class 1 areas – Preserve the existing character of the landscape. Manage VRM Class 1 lands to preserve the existing character of the landscape. Where natural, ecological changes dominate, the level of change provided by management actions should be very low and not attract attention. (see also Wilderness Study Area section)
- VRM Class 2 areas – Retain the existing character of landscapes. Manage VRM Class 2 lands for low levels of change to the characteristic landscape. In these areas,

management activities may be seen but should not attract the attention of the casual observer. Changes should repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

- VRM Class 3 areas – Partially retain the existing character of the landscape. Manage VRM Class 3 lands for moderate levels of change to the characteristic landscape. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.
- VRM Class 4 areas – Allow major modification of existing character of landscapes. Manage VRM Class 4 lands for moderate levels of change to the characteristic landscape. Management activities may dominate the view and be the major focus of viewer attention. Every attempt would be made to minimize the effect of management actions through careful location, minimal disturbance, and repeating the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
- VRM Class 5 areas – Areas in need of rehabilitation from a visual resource standpoint.

For all alternatives, the Badlands WSA, Steelhead Falls WSA, and the Horse Ridge ACEC/RNA/ISA are designated as VRM Class 1 (see also Appendix H). BLM-administered lands in the Horse Ridge, Crooked River corridor, Middle Deschutes corridor, and Prineville Reservoir area are designated as VRM Class 2. BLM-administered lands in the Mayfield area, portion of Horse Ridge, Millican Plateau, North Millican, and Prineville Reservoir are designated as VRM Class 3. Portions of BLM-administered lands in South Millican, North Millican and Millican Plateau areas are designated as VRM Class 4.

Recreation

Motorized and non-motorized recreation would be managed to provide visitor satisfaction, protect natural resources, provide visitor safety, and minimize conflicts among various users and neighbors. There are relatively few areas of continued travel management designations for all alternatives. This is partially due to the lack of Open designations in the action alternatives, and also due to the differences in Limited designations made in the B/LP RMP versus those made in the FEIS/PRMP (e.g., new seasonal or type of vehicle limitations). The travel management designations that are continued management direction include:

- Areas designated as Limited (i.e., use limited to designated trails and/or roads, use limited seasonally, etc.) including portions of Cline Buttes, North Millican, and the Sanford Creek area south of Prineville Reservoir are designated as Limited throughout all alternatives. However, there are important distinctions between some of the alternatives on the types of limitations applied to these areas – so these areas are not managed in a common manner throughout all alternatives.
- Areas designated as Closed to motor vehicles including, but not limited to, BLM-administered lands adjacent to Smith Rock State Park; lands atop Powell Butte; several small parcels near urban areas, including Redmond Caves (Redmond), Barnes Butte (Prineville), and the airport allotment and Rickard Road areas (Bend); the Horse Ridge ACEC/RNA; and several parcels located along the Middle Deschutes River southwest of Redmond.

Other elements of continued management direction include:

- The BLM would continue to pursue a cooperative agreement to manage the area known as the ODOT pit. If acquired, the BLM would develop the site as a permanent casual-use staging area, and the hillclimb areas behind the play area would be closed, but the play area itself would be Open year-round.
- Roads, trails, and OHV use in the ODOT pit (North Millican area) would be managed as follows:
 1. One casual use staging area would be developed in the North Area at the cinder pit. This staging area would have a graveled parking area, loading ramp, and an information bulletin board.
 2. A warm-up area would be developed at the cinder pit. The area would consist of about a 35-acre area, with ten acres fenced and signed, primarily for use by children.
 3. The hillclimb area at the cinder pit would be maintained.
- Roads and/or trails located on private property that is acquired through exchanges, sales, or acquisition of easements would be evaluated for addition to the road and trail system. Priority would be given to roads that provide key linkages or provide loop opportunities, or roads and trails that would replace other routes with resource or safety concerns.
- An event staging area, the Millican/West Butte Road Staging Area, would be developed; and a staging and warm-up area near or at 4-Corners would be developed.
- Provide for rockhounding opportunities, by managing specific areas for rockhounding use (see Minerals, Rockhounding for details).

Special Recreation Permits and R&PP Leases

All alternatives would provide opportunities for recreation services to be provided by others on BLM-administered lands. Special Recreation Permits would be required for all commercial and competitive uses on public lands. All alternatives would allow for R&PP (Recreation and Public Purposes Act) leases to provide for recreation opportunities managed by others (e.g., shooting ranges).

Transportation and Utilities

Current BLM direction for management of transportation systems and other rights-of-way is represented in the B/LP RMP, and is carried forward under all alternatives. Direction for regional and local transportation systems and other rights-of-way is summarized below.

All alternatives would continue to emphasize identifying and designating transportation systems, utility corridors, or other rights-of-way to minimize environmental impacts, and consolidate uses wherever possible. Areas within runway protection zones of existing airports are identified and uses and developments within those areas on BLM-administered lands are allowed if they are suitable to preserve the clearance needs. Areas of Critical Environmental Concern, Wilderness Study Areas, and Congressionally Designated Areas are exclusion areas for new developments, and sites with known special status species plant or animal species, cultural resources, or sensitive visual resources are avoidance areas that may require special mitigation measures. Anticipated future regional utility corridor needs identified in B/LP RMP continue to be represented by maintaining a “Western Regional Utility potential corridor” designation within the planning area if they have not been developed since 1989. Existing arterials through BLM lands would be maintained.

Land Ownership

Under all alternatives, lands would be classified for retention (having high resource values); retention but available for disposal through exchange for lands with higher

public values; and disposal (do not provide substantial public or tribal benefit) as prescribed in FLPMA and the Taylor Grazing Act. Lands are also classified for community expansion needs in accordance with FLPMA.

Lands for retention, including those public lands in Wild and Scenic River areas, identified for retention in the Middle Deschutes/Lower Crooked River (Chimney Rock Segment) Management Plan and designated in the Brothers/La Pine Resource Management Plan would remain Z-1,⁵ and all habitat essential for the survival and recovery of any federally listed or proposed species or BLM sensitive species, including historic habitat that has retained its potential to sustain listed species and is deemed to be essential for species survival (BLM Manual 6840- Special Status Species Management). Trading of land to acquire habitats of equal or better in value would also be considered.

Lands selected for disposal in B/LP RMP that continue as Z-3 would qualify for retention of funds under the BACA bill (see Appendix B), which allows BLM and certain other Federal agencies to request money for the purchase of private lands. These lands include isolated parcels between Bend and Redmond, isolated parcels around Prineville, and isolated parcels northwest of La Pine.⁶

All alternatives would emphasize providing land for community needs and uses consistent with public land management mandates. In addition, the agency could use easements to compliment acquisitions, in lieu of acquisition for conservation or access as appropriate to further public management objectives (see also Appendix D for Lands Classified as Disposal, Withdrawal, and Acquisition). All withdrawals would continue as displayed in FEIS Map 1.

All withdrawals affecting the planning unit would be reviewed periodically to insure the lands being utilized are consistent with the purpose for which the lands were withdrawn. Lands found suitable for return to the public domain shall be restored to entry and managed according to management prescriptions for lands having similar resource values. All new withdrawal proposals would be considered on a case-by-case basis, including land use needs of other Federal agencies.

Public Health and Safety

Firearm Discharge

The Brothers/La Pine Resource Management Plan does not address the issue of firearms within the planning area. It does acknowledge that hunting “occurs throughout the planning area.” Subsequent Federal Register firearm closures have been established to protect wildlife resources and other natural and cultural features, reduce vandalism, and to improve public safety. These closures include raptor closures at Badlands Rock and Fryrear Road, and the high use closure at Rosland OHV area.

Campfires

Wildland fire management related to campfires is briefly addressed below, although most of the wildland fire management discussion can be found in the Vegetation section. If determined necessary, the fire closures could be extended based on existing conditions.

⁵Early in the process these public lands were placed outside the scope because they had more recent plans that met Congressional mandates. However, specific acquisition parcels were not identified in the river plans, and have, consequently, been identified in this plan.

⁶Under BACA, the money derived from the sale of qualifying public lands may be made available to purchase private lands in the same area.

Pursuant to 43 CFR 9212.2 (a), “To prevent wildland fire or facilitate its suppression, an authorized officer may issue fire prevention orders that close entry to, or restrict uses of, designated public land.” the following sections of river would be closed to campfires seasonally, from June 1 to October 15:

1. Within 1/2 mile of the River’s edge along the Lower Crooked River from the Highway 97 bridge to Lake Billy Chinook,
2. Within 1/2 mile of the River’s edge along the Middle Deschutes River from Highway 20 bridge to Lake Billy Chinook.

Archaeology

In compliance with The Archaeological Resources Protection Act, as amended, and the National Historic Preservation Act (NHPA), as amended, all alternatives would emphasize locating, protecting, preserving, enhancing, and interpreting archaeological resources in accordance with existing legal authorities and policies, with a special emphasis on “At-Risk” significant archaeological resources.

Alternative 1

The Brothers/La Pine Resource Management Plan (Record of Decision (ROD), 1989) describes in general terms how resources would be managed, the order in which projects would be implemented, and what support would be needed to manage those resources. In general, this plan provides a broad framework for multiple use public land management and makes land use allocations, establishes production goals and protects valuable resources.

While the Upper Deschutes Management Plan expresses desired outcomes and/or desired conditions in terms of goals, objectives and guidelines, this format was not originally used in the B/LP RMP so there is some difficulty in an exact comparison in some areas between Alternative 1 and 2-7.

Included here is direction that would be changed or eliminated in Alternatives 2-7. Additional rationale, when necessary, will be listed in this alternative. This alternative also assumes inclusion of all elements listed in the Continued Management Direction section.

Ecosystem Health and Diversity

Vegetation

Ecosystem Maintenance and Restoration

The B/LP RMP addresses most vegetation issues from the perspective of land treatments. Management direction allows a variety of vegetation manipulation techniques, by habitat type, to improve the ecological condition of the land in the long-term. Habitat-specific vegetation guidelines are listed under each sub-issue heading described below. See “Land Treatment” pages 88 – 90 in the B/LP RMP.

Special Status Plants

Management direction includes allowing activities that would benefit special status species through habitat improvement, and prohibiting actions that would not meet “no effect” criteria.

Noxious Weeds

See Continued Management Direction for Noxious weeds.

Shrub-Steppe

While the B/LP RMP did not specifically address shrub-steppe habitat, guidelines for this type of vegetation include using techniques like spraying and burning to control shrubs, and conducting shrub control treatments only after an allotment assessment has been completed. See “Juniper and Shrub Control” (pages 88-89, B/LP RMP 1989) for a complete description of shrub control methods and specific guidelines. In addition, refer to “Brush Control” and “Standard Operating Procedures” for direction for additional vegetation management guidelines.

Western Juniper

See “Juniper and Shrub Control” (pages 88-89, B/LP RMP, 1989) for a complete description of juniper control methods and specific guidelines.

Lodgepole and Ponderosa Pine Forests

Land Uses—Forest Products, below.

Riparian and Aquatics

Management actions within riparian areas would include measures to protect or restore natural functions, and would maintain or improve current good to excellent streambank stability and riparian vegetative condition. Riparian habitat needs would be considered in developing livestock grazing systems and pasture designs. Riparian areas in the Brothers portion would continue to be protected and managed to provide full vegetative potential. Riparian vegetation in the Brothers portion would be expected to improve on 75 percent of the stream riparian habitats.

- Livestock exclusion or restricted use along 46 miles of stream, 55 miles of stream stabilization, 620 stream structures and 15 acres of debris removal would improve fish habitat. Where fencing is not feasible, livestock use would be managed to achieve 60 percent of vegetative potential within 20 years.

Wildlife

For wildlife, two of the overall goals of the B/LP RMP are to provide for commodity production while protecting natural values, and to provide optimum habitat diversity for wildlife species. In addition, the B/LP RMP proposes to meet ODFW management objective numbers for deer and elk in the planning area. Specific management direction and guidelines can be found under the headings below.

Wildlife Habitat

Direction in the B/LP RMP was developed differently than the FEIS, and did not include primary, secondary and general wildlife emphasis areas. Therefore, a wildlife emphasis theme was created for Alternative 1 (based on the direction in B/LP RMP) to allow us to provide comparisons of Alternative 1 with other alternatives. To facilitate that comparison, Brothers-La Pine plan direction was transposed on the objectives and guidelines intended to be applied to alternatives 2-7. By applying Brothers-La Pine direction that was intended to accomplish much the same objectives as primary, secondary, or general emphasis, some general acreage comparisons can be made between Alternative 1 and the other alternatives. This technique is used to describe the Brothers-La Pine management direction in the same wildlife emphasis terms as are used throughout this analysis. The primary management direction is to protect or improve important wildlife habitat offering food, water and shelter during all seasons of the year. In addition, management actions should protect, maintain or enhance the habitat of special status animal species.

- Approximately 160,627 acres (40% of plan area) would be managed at a level similar to primary emphasis; 55,618 acres/(15%) at a level similar to a secondary emphasis; and 187,075 acres/(46%) at a level similar to a general emphasis (see Table 2-3, Wildlife Emphasis Areas – All Species Habitats and Tables 2-4 to 2-9 for further detail).
- Habitat management plans would be written for high priority wildlife habitats (such as bald eagles and sage grouse). These plans would detail how those habitats would be improved or maintained.
- Agricultural use of public land could be authorized if the use does not conflict with riparian area management; important wildlife habitat ...and the use would maintain or enhance...all habitat requirements for wildlife species” (B/LP RMP, p.29).
- Recreational activities that involve motorized vehicles driving off roads and trails could occur as long as they do not create significant adverse impacts to resource values, and this includes all of the La Pine area.
- Public lands where significant damage to soils, vegetation, wildlife, or visual qualities would either be limited or closed (see B/LP RMP Map 18, Wildlife Habitat, pages 94-95, for acreages).

Special Status Wildlife Species

Management activities in the habitat of listed or candidate threatened or endangered and sensitive species would be designed specifically to benefit those species through habitat improvement (see B/LP RMP, p. 122 for additional guidelines and consultation recommendations):

- Maintain or improve habitats of other naturally occurring or locally important species. Provide adequate habitat conservation measures for both vegetation altering and disturbance related activities (see B/LP RMP (p. 92-97) for specific deer, elk and pronghorn management objective numbers).
- No land tenure adjustments, programs or other activities would be permitted in the habitat of listed or candidate threatened or endangered species that would jeopardize the continued existence of such species. All land tenure adjustments must consider habitats for threatened, endangered and sensitive species; important deer, elk and pronghorn seasonal habitats; nesting and breeding habitats for all wildlife; and riparian habitat.
- The anticipated long-term forage available to wildlife in the Brothers area would accommodate ODFW proposed population increases of 27 percent for deer, 23 percent for pronghorn and 71 percent for elk based on 1980 population counts.
- The grazing systems implemented in deer and pronghorn winter range are to improve or maintain habitat conditions on 97 percent of the crucial deer winter range and 95 percent of the crucial pronghorn winter range based on 1982 conditions (B/LP RMP p. 97).
- In crucial wildlife habitat (winter ranges, fawning/calving areas, sage grouse nest areas, etc.), construction work would be scheduled during the appropriate season to avoid or minimize disturbances. In addition, wildlife needs would govern the size and design of the projects (B/LP RMP, p. 90).
- The Millican Off-Road Vehicle Area would be managed in accordance with the interim court decision (1999), where there are seasonal closures and limited motorized vehicle access to protect wildlife (in particular, deer, elk, pronghorn and sage grouse winter habitat).

- All new fences would be built to standard Bureau wildlife specifications to allow wildlife passage and existing fences would be modified as appropriate (B/LP RMP, p. 97).

Hydrology

Water Quality

Existing water quality would be maintained or enhanced consistent with or exceeding Oregon's water quality standards. The BLM would participate as appropriate with DEQ and the Oregon Department of Agriculture (ODA) in the development and implementation of TMDLs, WQMPs, and ODA Agricultural Water Quality.

- Livestock exclusion in the same area described in the riparian area above would maintain or improve water quality.

Fire/Fuels Management

See Continued Management Direction for Brothers/La Pine direction carried forth in the UDRMP.

Special Management Areas

The following describes direction from the B/LP RMP that would carry forward only if the no action alternative was selected.

Wilderness Study Areas (WSAs)/Instant Study Areas (ISAs)

With the exception of the ACEC portion of Badlands WSA, Management of WSAs in the B/LP RMP was limited to guidance provided by the BLM Wilderness Interim Management Policy. However, subsequent direction in addition to the Interim Management Plan can be found in the Millican OHV EA and Litigation Settlement Agreement (see detailed reference in the Analysis of the Management Situation, pages 129 – 130).

Areas of Critical Environmental Concern (ACECs)

Lower Crooked River ACEC (2,592 acres)

The public lands would be managed in a manner that would ensure continued public use and enjoyment for a variety of recreation activities compatible with the protection and enhancement of the river's natural resources, including scenic quality. Also, high quality visitor services, including access roads, camping and day-use facilities, signs and interpretive information, would be provided.

Peck's Milkvetch ACEC

This ACEC would be managed as in Continued Management Direction.

Wagon Roads ACEC (191 acres)

Alternative 1 would continue to protect the integrity of the following segments of the historic Huntington Road and provide for its use as in interpretive resource (see DEIS Map 7):

- Township 17, Range 12, Section 1
- Township 16, Range 13, Section 21
- Township 15, Range 13, Section 33

Withdrawal of this ACEC from mineral entry under the 1872 mining laws as amended would be pursued.

Other than what is Continued Management Direction, there are no restrictions specific to this ACEC for fire management, vegetation treatments, special forest and range products, livestock grazing, minerals, recreation, firearm discharge, rights of way, and land ownership

Caves

Pictograph (Stout) Cave

Pictograph Cave would be closed year-round to all visitations.

Land Uses

Livestock Grazing

Resolving conflicts

Under current management, conflicts between livestock grazing and uses on public and adjacent private land are resolved on a case-by-case basis. There is no system in place to estimate potential for problems (besides ecological concerns) or to help the BLM prioritize where action is most needed to prevent future conflicts. There are no guidelines to help managers decide where potential conflicts are so high that livestock grazing might no longer be manageable under the current conditions (and there is a need to change conditions or discontinue livestock grazing).

Disturbance Events

After vegetation treatments (such as prescribed burns, seeding, juniper cuttings, weed treatments, et cetera) and wildland fires, livestock grazing would not be permitted for the first full year and through the second growing season following the event (per 2002 decision briefing clarifying B/LP RMP direction). The field manager could adjust this restriction upon recommendation from an interdisciplinary team. Exceptions are not specified.

Many of the general management goals and direction were modified when the Standards for Rangeland Health were incorporated into the B/LP RMP in 1997 (see Continued Management Direction section in this chapter). Direction that was not amended and that continues in this and all alternatives is described in the Continued Management Direction section in this chapter, and displayed in Appendix C.

Minerals

General

Alternative 1 would provide for commodity production while protecting natural values, and allow development of locatable, leasable, and salable mineral resources across the entire planning area except in areas identified in the B/LP RMP as closed to mineral entry (see B/LP RMP, pages 107- 121, for specific minerals guidelines; also see DEIS Map S- 22, Minerals Alternative 1). Under this alternative, approximately 403,910 acres would continue to be available for mineral material sales. Seasonal restrictions on all mineral operations would continue to apply to 52,587 acres. Surface occupancy for fluid mineral leasing would continue to not be allowed on 21,254 acres.

Rockhounding

Alternative 1 would also provide for recreational rockhounding opportunities. In addition to the North Ochoco Reservoir, Eagle Rock, and Fischer Canyon sites Continued Management Direction, Alternative 1 would continue the designation of the Prineville Reservoir and Reservoir Heights sites for recreational rockhounding. These rockhounding sites would be designated as all BLM-administered lands within the

following areas: (1) Prineville Reservoir - Sections 1 and 24 of T17S R16E, (2) Reservoir Heights - Sections 4 and 7 of T17S R16E, (3) North Ochoco Reservoir – Section 31 of T14S R17E, (4) Eagle Rock – Section 11 of T16S R17E and (5) Fisher Canyon – Sections 9, 15, and 17 of T18S R17E. Rockhounding management plans would be developed for each of these sites (see Brothers/La Pine RMP pages 49-52).

Forest Products

Decisions on timber harvest in the La Pine area would be made with four primary objectives: (1) reduction of extreme fire hazard; (2) salvage of dead and dying timber; (3) successful reforestation; and (4) increasing subsequent growth of commercial tree species. Specifically, in the La Pine portion, 14 MMBF (million board feet) of timber and 2,500 cords of firewood would be harvested annually. In the Brothers portion, 87 MBF (thousand board feet) of timber and 2,000 cords of firewood would be harvested annually. Dead timber would be utilized to reduce extreme fire hazards while accommodating other resource values. Forestland would be managed to minimize losses or damage to commercial tree species from insects and disease. Maintaining or improving site productivity would be a basic objective in all forestry practices. Harvesting minor forest products, such as posts, poles, or firewood, would be guided by similar considerations.

Realty Permits/Military Uses

Military training is currently permitted on approximately 28,858 acres⁷ utilizing short term (3 year) permits.

Visual Resources

Alternative 1 would continue existing Visual resource management classes as described under Continuing Management Direction

Recreation

The B/LP RMP designated approximately 153,664 acres (38 percent) of the planning area as open to off-road vehicles. The travel management designations in the B/LP RMP have been amended by additional planning decisions, including the Millican Valley Plan and associated Consent Judgment. These changes have generally resulted in greater acreages in the current planning area being designated as either Limited or Closed than originally in the B/LP RMP. Alternative 1 designates approximately 6,553 acres (1.6 percent) as closed to motor vehicles and approximately 227,379 acres (56 percent) as Limited. The travel management designations for Alternative 1 are shown on DEIS Map 8, Recreation Travel Access and Motorized Use Seasons (see pages 45-48 of the B/LP RMP for guidelines specific to geographic areas).

Because the B/LP RMP did not provide specific management direction for recreation use beyond the management of OHV and rockhounding use, management of these activities are generally the only ones with specific direction in Alternative 1 (see also Minerals Section, Rockhounding).

Geographic Areas

The B/LP RMP did not identify specific geographic areas similar to the FEIS/PRMP. However, Alternative 1 is described using these FEIS/PRMP geographic areas for ease of comparison.

Badlands

The Badlands WSA would be managed for motorized use on a designated system of

⁷Several of the documents developed prior to GIS technology refer to the same area as 31,352 acres. The discrepancy is a calculation error that attributed full acreage to sections that do not have the standard number of acres per section.

inventoried routes, comprising 7.6 miles available year-round and 20.5 miles available seasonally. Including the above mentioned routes, approximately 49 miles of routes would be available for non-motorized recreation use.

- Motorized use would be limited to the following routes and seasons only:
 1. Route 8 (approximately 8 miles)--Open to motor vehicles year-round.
 2. Routes 4, 5, 6, and 7 (approximately 12 miles)--Open to motor vehicles between May 1 and November 30.
- Mountain bike use would be managed under IMP policy, which does not allow any vehicle off existing ways, trails, etc. IMP policy allows mechanical transport, including mountain bikes, only on existing ways and trails and “open” areas that were designated prior to the passage of FLPMA.

Bend/Redmond

- The entire block is designated Open to motorized vehicles year-round.

Cline Buttes

- Cline Buttes block south of State Highway 126 designated as Limited to existing roads and trails year-round.
- Cline Buttes block north of State Highway 126 designated as Open
- Small parcels along Middle Deschutes are Closed to motorized vehicles.
- Youngs Avenue parcel east of Cline Buttes is designated Open year-round

Horse Ridge

- The Skeleton Fire Travel Management area is Limited to designated roads only, year round.
- Continues Millican Plan policy that “No designated trails will be provided in Horse Ridge,” but leaves possibility for future trail designation if easements or private land in center of area are acquired.
- A portion of Horse Ridge would be managed under provisions of the Millican Plan and the consent judgment, and other portions of Horse Ridge would be managed under provision of B/LP RMP; therefore, some of this area managed for designated roads and trails, with seasonal restrictions on both motorized and mechanized use, while other areas in Horse Ridge are Limited to existing routes and open year-round.
- The Horse Ridge ACEC/RNA is Closed to motor vehicles year-round.

La Pine

- The entire area is designated as Open to motor vehicles.

Mayfield

Motorized Vehicle use is limited to a designated road system only in the area north of Alfalfa Market Road. The area south of Alfalfa Market Road is designated Open.

Millican Plateau

- The area is Limited to existing Roads and Trails as per the Consent Judgment except: The remainder of the area located west of State Highway 27, east of Johnson Market Road, south of State Highway 26 and north of Reservoir Road is managed as limited to existing roads and trails.
- The remainder of the area located east of State Highway 27 and north of Prineville Reservoir is designated as either Open, Closed, or Limited, with no boundaries that are recognizable on the ground.

North Millican

- The entire area would be managed as Limited to designated roads and trails; seasonally closed from December 1 to April 30.
- Roads and trails not identified in the designated trail system and not already identified as open to public use (such as county roads) would be evaluated and placed into one of the following categories:
 1. Roads that are closed to public use but would be available for administrative and emergency use.
 2. Trails and roads that would be closed and rehabilitated.
 3. Roads needed for continued public motorized use
 4. Roads that would be designated for, or converted to, non-motorized use.
- Non-competitive Use – Highway area (also known as the Deer Winter Range area in Millican Plan) is Open for casual motorized and mechanized use from May 1 to November 30 annually.
- Events for both motorized and non-motorized activities would be Limited according to the following seasonal restrictions:
 1. Entire Highway area would be Open to motorized and mechanized events during month of April and from October 1 through November 30 annually.
 2. Entire area would be Open year-round for non-motorized and non-mechanized use. Closure restrictions in deer winter range identified in Millican Plan would apply to horse-drawn carts (i.e. no horse-drawn carts from December 1 to April 30, except of course if they are used in an event during the month of April).
 3. Events – no non-motorized / non-mechanized events would be allowed in Deer Winter Range from December 1 through April 30 (as defined by Millican Decision Record).
 4. Most of the area (i.e., the southern area and both sides of Millican / West Butte Road, also known as the area covered by the Millican OHV Area boundary) would be open for mountain bike events during April and from October 1 through November 30 each year, on designated road and trails only. The remainder of the area (i.e., West Butte and the area west of State Highway 27 and east of Juniper Acres subdivision) would be open for events year-round.
- Development of Horse Use staging area (for dispersed, primitive camping) in southeast portion of area, located off Road 6521, would occur.
- No designated, motorized trails would be developed in Rodman Rim area.
- Entire area would be managed as Limited to designated roads and trails, seasonally closed from December 1 through April 30, except for:
 1. Year-round routes would be open to street legal vehicles
 2. BLM-administered lands on the eastern edge of the Southeast Area would be managed as Limited to existing routes and trails. This area includes lands east of the Millican Plan OHV area boundary, north of State Highway 20, west of State Highway 27, and south of Bear Creek / Reservoir Road.
- Most of the area (i.e., the southern area and both sides of Millican / West Butte Road, also referred to as the area covered by the Millican OHV Area boundary) would be open for OHV events during April and from October 1 through November 30 each year, on designated road and trails only. The remainder of the area (i.e., West Butte and the area west of State Highway 27 and east of Juniper Acres subdivision) would be open for events year-round.

- The entire area would be Open for mountain bike use year-round

Northwest

The area would be designated Open.

Prineville

All BLM-administered lands in the area would be designated as Open year-round, except:

- 160 acre Barnes Butte Parcel would be designated Closed
- The southeast corner of the area (Eagle Rock area north of Prineville Reservoir) would be designated as Limited to existing roads.

Prineville Reservoir

- The southern two-thirds of the area would be designated as Open (as per B/LP RMP).
- The area adjacent to BOR managed lands south of Prineville Reservoir would be Limited to designated roads (post B/LP RMP EA) or Limited to designated roads and trails (B/LP RMP).

Smith Rock

The entire block would be designated Closed to motor vehicles year-round (see Continued Management Direction).

South Millican

- Millican would be Limited to designated roads and trails, with a seasonal closure (December 1 to July 31), as per the Consent Judgment.
- Primary staging area for casual use and event in the South Millican Area would be located approximately 1-1.2 miles west of Millican and one mile south of State Highway 20 (see Map 1, FEIS/PRMP Planning Area). Typical improvements would include bulletin board, loading ramp, and toilets as use levels warrant.
- The South Millican Area would remain as part of the larger Millican Valley OHV Area.

Steamboat Rock

- Main Steamboat Rock Block would be designated as Open, with year-round use.
- The BLM-administered lands along the Deschutes and Crooked Rivers north of the main Steamboat Rock block (i.e., west and east of Crooked River Ranch) would be Limited to designated roads or routes.
- Isolated parcels northwest of Redmond would be designated as Open, with year round use.

Tumalo

- Most of main block located north of Couch Market Road would be designated Limited to existing roads and trails.
- Small block south of Tumalo Reservoir would be designated Open.
- All BLM-administered lands in the Tumalo Block are seasonally closed to motor vehicle use from December 1 to April 15.

Transportation and Utilities

All transportation and utilities direction contained in B/LP RMP and subsequent decisions would be carried forward through all of the alternatives (see Continued Management Direction).

Regional Transportation

Alternative 1 would not specifically designate transportation corridors for regional transportation systems; however, applications for rights-of-way would be evaluated as required under law, and could potentially be granted after analysis. For the purposes of comparison to other alternatives, consistent with state requirements, the No Action alternative would mean no future rights-of-way. Under this alternative, urban needs would be assumed to be resolved within existing urban areas.

Land Ownership

Alternative 1 would maintain or increase public land holdings in Zones 1 and 2; exchange, or if exchange is not feasible, sell Zone 3 lands if they meet FLPMA Section 203 disposal criteria; and acquire legal access to inaccessible public lands in Zone 1 and 2 (see Glossary for definition of land ownership zones).

Alternative 1 would exchange or sell land in the La Pine core area; and exchange, transfer or sell public land near Bend, Redmond and Prineville to local governments as needed to accommodate community expansion and other public purposes (see B/LP RMP for specific criteria used in selection).

Public Health and Safety

The B/LP RMP did not include a comparable section to the Public Health and Safety section found here. The B/LP RMP did address public health and safety issues throughout the document, but these elements were not separately identified and collected in a single section. The change was made because of the current elevated importance of public health and safety issues, and to improve document readability. The B/LP RMP does not address the issue of firearms within the planning area. It does acknowledge that hunting “occurs throughout the planning area.” Subsequent Federal Register firearm closures have been established to protect wildlife resources and other natural and cultural features, reduce vandalism, and improve public safety. These closures include a raptor closure at Awbrey Falls and wildlife resource and safety closures at Mayfield Pond and the Middle Deschutes Wild and Scenic River.

Archaeology

Alternative 1 would conduct cultural resource site monitoring, and complete cultural resource surveys in all project areas where ground disturbance would occur. Sites encountered during surveys would be protected from the effects of project undertakings, evaluated for their eligibility to the National Register of Historic Places and managed for their resource values (see B/LP RMP page 126 for specific guidelines for cultural resources).

Management Direction Common to Alternatives 2 – 7

In addition to existing management that would be continued under the Proposed RMP some new direction would be adopted that would be common for Alternatives 2 – 7. This management direction Common to Alternatives 2-7 is described below by Issue category.

Ecosystem Health and Diversity

Vegetation

Ecosystem Maintenance and Restoration

Alternatives 2 – 7 would emphasize maintaining and restoring healthy, diverse and productive native plant communities appropriate to local site conditions. These alternatives would identify opportunities to actively re-pattern vegetation on the landscape to conditions more consistent with landform, climate, biological, and physical components of the ecosystem. Vegetation structure, density, species composition, patch size, pattern, and distribution would be managed to reduce the occurrence of uncharacteristically large and severe disturbances. Actions would maintain or mimic natural disturbance regimes so that plant communities would be resilient to periodic outbreaks of insects, disease and wildland fire (see Appendix F, Best Management Practices).

Integration of Vegetation Management with Recreation Trail Management

Special considerations would be implemented for integration of vegetation management with recreation management areas with high density trail systems, trail systems with important regional demand and the need for separation of different trail user groups. Vegetation/ fuels treatments and trail design would be integrated to protect old-growth juniper, enhance traveler and recreationist safety, and mitigate degraded ecosystem conditions, weeds and soil erosion.

Shrub-Steppe Communities and Old-Growth Juniper Woodlands

Alternatives 2 – 7 would emphasize maintaining and restoring large contiguous stands of healthy, productive and diverse native shrub-steppe plant communities through active use of prescribed fire and mechanical treatments.

Under these alternatives, the health and integrity of old-growth juniper woodlands/ savanna would be protected and restored through a broad scale conservation approach. Activities would consider the importance of old growth juniper in mapped range.

Late and Old Structure Ponderosa and Lodgepole Pine

Alternatives 2 – 7 would provide direction to maintain and promote old forest structure and conditions through active treatments and restoration activities. Existing and developing old forests would be protected from ground-disturbing development and land use actions, and from uncharacteristically severe natural disturbances (i.e. stand-replacing wildland fire, and insect and disease epidemics). Actions would be designed to develop and maintain stand structures that are relatively complex with highly variable tree densities, healthy and diverse understory composition, and abundant snags and downed logs.

Ecosystem Condition and Assessment

Alternatives 2 – 7 would include management direction to obtain and efficiently display information to help integrate analyses at all levels ranging from broad-scale assessments to site-specific projects. Integrate assessments at all scales with complimentary or associated efforts by other entities such as watershed councils and non-profit organizations.

Riparian and Aquatic

There are six components of aquatic and riparian conservation included in the framework of Alternatives 2-7. These include: establishing objectives and guidelines for the management of Riparian Conservation Areas, protection of population strongholds for listed or proposed species and narrow endemics; multi-scale analysis; restoration priorities and guidance, and monitoring and adaptive management.

Emphasis in Alternatives 2-7 is placed on coordinating and integrating restoration objectives with other sub-basin efforts to restore salmon into the middle Deschutes River below Big Falls and the lower Crooked River below Bowman Dam. These include but are not limited to the settlement agreement for the re-licensing of the Pelton-Round Butte hydroelectric dam; sub-basin assessments drafted for the Northwest Power Planning Commission; instream flow studies currently being conducted in the Middle Deschutes and recently completed in the Lower Crooked River, instream flow restoration efforts; Water Quality Restoration Plans; and non-profit organizational efforts to conserve lands within the salmon restoration area.

Common to Alternatives 2 – 7 would provide direction to maintain, protect, and/or restore aquatic and riparian-dependent terrestrial resources. Riparian Conservation Areas (RCAs) are intended to: maintain and restore riparian structures and functions; benefit fish and riparian-dependent resources; enhance conservation of organisms that depend on the transition zone between upslope and the stream; and improve connectivity of travel and dispersal corridors for terrestrial animals and plants, and aquatic organisms. These alternatives would have management direction to restore, maintain, or improve riparian vegetation and habitat diversity to achieve healthy and productive riparian areas and wetlands and to support populations of well-distributed native and desired nonnative plant, vertebrate, and invertebrate populations.

Areas of Traditional Cultural Plants

Under Alternatives 2-7 the BLM would consult with local Tribes to identify areas that possess cultural plants of tribal interest on lands administered by the BLM. Where feasible, and under the auspices of a multiple use policy, the BLM would work with the Tribes to protect and enhance cultural plant populations at identified locations for the benefit of tribal communities.

Wildlife

Alternatives 2 – 7 would emphasize actions or conditions of use to promote conservation of listed species and the ecosystems on which they depend. Management for wildlife values would be emphasized less in WUI areas to reduce the potential for extreme wildland fire potential in the wildland urban interface zones.

These alternatives would all incorporate existing and future potential relevant landscape features near Prineville Reservoir and Grizzly Mountain into a conservation strategy for Bald Eagles. Management techniques, such as altering or removing trees and shrubs, prescribed and managed wildland fire, livestock grazing, and planting may be used to maintain or improve habitat conditions for bald eagles.

Common to Alternatives 2 – 7 would also emphasize protecting and restoring special habitat components or features that contribute to the productivity of species. These features include, but are not limited to caves, cliffs, playas, riparian areas and wetlands, foraging areas, and snags and downed wood. These alternatives would provide direction to maintain and/or recruit adequate numbers, species and sizes of snags and levels of downed wood to contribute meaningfully to the needs of wildlife, invertebrates, fungi, bryophytes, saprophytes, lichens, other organisms, long-term soil productivity, nutrient cycling, carbon cycles and other ecosystem processes (see also Vegetation, Ecosystem Maintenance and Restoration).

Suitable special habitat components would be provided across the planning area (see also Vegetation), and could be maintained or improved using a variety of techniques, such as mowing of shrubs, prescribed burning, livestock grazing and/timber harvests. Rock quarries could be developed on cliffs or talus slopes not occupied by special status species.

Common to Alternatives 2 – 7 would be management direction to respond to the need to determine the distributions, abundance, reasons for current status, habitat, and management needs of Special Status Species occurring on BLM-administered lands, and evaluate the significance of these lands and BLM actions for the conservation of these species.

Common to Alternatives 2 - 7 would be management direction to emphasize maintaining and supporting healthy, productive and diverse populations and communities of native plants and animals (including species of local importance) appropriate to soil, climate and landform. Where consistent with habitat capabilities, this agency would help meet ODFW management objective numbers for pronghorn, deer and elk.

Common to Alternatives 2 - 7, all new fences would be built to standard Bureau wildlife specifications to allow wildlife passage and existing fences would be modified as appropriate with the exception of fences built specifically to keep ungulates out of an area.

Wildlife Habitat Emphasis

Primary wildlife emphasis means wildlife is one of the most important management considerations for an area. Areas allocated to primary emphasis are intended to benefit wildlife and retain high wildlife use by applying one or more of the following guidelines:

- Target habitat effectiveness⁸ for a geographic area at 70 percent or greater
- Where possible, maintain large, un-fragmented patches (1000 to 2,000 acres)
- Target low densities of open motorized travel routes (<1.5 mi / mi²)
- Rate as a high priority for habitat restoration treatments

Secondary wildlife emphasis is where wildlife is one of several resource management programs that are of focus in an area, and typically receive a slightly lower, but still significant, level of management consideration. Areas allocated to a secondary emphasis are intended to support wildlife and maintain a moderate amount of use. The following management guidelines reflect a lower degree of importance than primary emphasis areas:

- Target habitat effectiveness for a geographic area at 50 percent or greater
- Maintain moderate size un-fragmented habitat patches(400 to 800 acres)
- Target low to moderate densities of open motorized travel routes (<2.5 mi / mi²)

General wildlife emphasis occurs where wildlife typically receives a lower level of consideration to most other resource management programs. These areas, as a whole, should still contribute to species occurrence and distribution, but typically are not the focus of intense management efforts for wildlife. Generally, guidelines are tied to minimum legal requirements identified in the sections on “common” guidance (Standards for Rangeland Health, BLM Special Status Species Policy (6840)), and the Threatened and Endangered Species Act.

⁸Habitat effectiveness is used as an index to measure the percentage of available habitat that is usable by elk and is used as a guideline for some alternatives. The Habitat Effectiveness Index for Elk on Blue Mountain Winter Ranges developed by Thomas *et al.* (1988) will be used with modifications developed from findings in Rowland *et al.* (2000) to assess effects related to motorized vehicles.

Sage Grouse

Within identified sage grouse habitat, actions would be consistent with the Greater Sage Grouse and Sagebrush-Steppe Ecosystems Management Guidelines as directed in IB No. OR-2000- 334. These guidelines would be adopted as interim guidance until a new management strategy is developed and adopted. This management strategy is to be implemented in concert with the process established in BLM's "Standards for Rangeland Health and Guidelines for Livestock Management for Public Lands in Oregon and Washington" and other applicable laws, regulations, and policies.

Bats

In addition to management direction Continued Management Direction for caves with known habitat suitable for bats, management direction Common to Alternatives 2 - 7 would be to provide suitable habitat for the restoration of bat populations (including Townsend's Big-Eared Bat) in a portion of the lava tube system known as Redmond Caves. Human uses may be excluded from some portion of the system if population restoration is determined feasible (see also Special Management Areas).

Hydrology

Water Quality

Common to Alternatives 2-7 would provide management direction to ensure that surface water and ground water influenced by BLM activities comply with or are making progress toward achieving State of Oregon water quality standards for beneficial uses as established by Oregon DEQ. Where water quality meets or exceeds the water quality standards, water quality would not be degraded.

For streams with segments included on the State 303(d) list, uses and activities would be allowed in watersheds as long as no anthropogenic effects that degrade water quality resulted from the activities or management action. Management would be adjusted as appropriate for uses or activities that contribute to water quality degradation and non-attainment of state standards.

For water bodies included on the State 303(d) list, management to restore water quality would be emphasized. As outline in the Memorandum of Agreement between BLM and Oregon DEQ, the BLM would implement the US Forest Service and BLM protocol for addressing 303(d) listed waters. One goal of this approach is to address all waters on BLM-administered land within the timeline established by Oregon DEQ. Consistent with this goal, the BLM would develop WQRPs to guide management and restoration that is consistent with Oregon DEQ water quality restoration objectives.

Watershed/Hydrologic Function

Management direction common to Alternatives 2 – 7 would, where the capability exists, restore, maintain and improve upland and hydrologic function through the reduction of overland flow, increased infiltration, and improved floodplain function. Within the Broad Scale High Restoration Priority Sub-basin (the Upper Crooked sub-basin as identified on DEIS Map S-14) that has not already been verified, this direction would determine actual restoration needs. Prior to any large scale site disturbing restoration activities that could affect hydrologic function, verification of restoration needs within the Broad Scale High Restoration Priority Sub-basin would be required. Verified High Priority Restoration Areas (DEIS Maps 5 and 6), characterized by zones of slightly higher precipitation, deeper soils, on slopes >15%, would be treated to improve infiltration and reduce overland flow. Existing habitats that support the strongest populations of wide-ranging aquatic species (Aquatic Strongholds, DEIS Maps 5 and 6) would be secured. "Securing"

can mean either reducing threats within the sub-watershed or reducing threats in adjacent sub-watersheds that would prevent achievement of sub-watershed objectives

Fire/Fuels Management

Common to Alternatives 2 – 7 would provide a management response on all wildland fires, appropriate to firefighter and public safety and resource values at risk. When assigning priorities, number one is always human safety with other decisions being based on relative property and natural resource values to be protected commensurate with fire management costs.

Burned areas would be rehabilitated to mitigate the adverse effects of wildland fire on soil and vegetation in a cost-effective manner and to minimize the possibility of long-term wildland fire recurrence/severity and invasion of weeds.

These alternatives would also provide management direction to restore and maintain ecosystems consistent with land uses and historic fire regimes through wildland fire use, prescribed fire, and other methods, as well as reduce areas of high fuel loading resulting from years of fire suppression that may contribute to extreme fire behavior. The concept of Fire Regime Condition Class introduced in the National Fire Plan (2002) would be used to guide restoration of fire dependent ecosystems utilizing prescribed fire and mechanical methods. Fire regime condition class (FRCC) is a classification of the amount of departure of a particular ecosystem from its natural fire regime. An ecosystem in condition class 1 is within the natural (historical) range of variability of vegetation characteristics; fuels composition; fire frequency, severity and pattern, and other associated disturbances. Ecosystems in condition class 2 or 3 are moderately or highly departed from the natural (historical) range of variability of vegetation characteristics; fuel composition, fire frequency, severity and pattern' and other associated disturbances. The national direction in fire management on federal lands is to manage fuels that are conditions class 2 or 3 toward a condition class 1 and to maintain those areas currently in condition class 1.

In the wildland-urban interface, the management of live and dead vegetation to provide for human safety and protection of property in the event of a wildland fire under hot, dry summer weather conditions would be the top management priority. Treatments would be designed to allow for manageable low flame lengths, while still considering recreation opportunities, wildlife habitat and corridors, visual quality, air and water quality, and public access issues. Communities at Risk and WUI zones, as identified and defined in the National Fire Plan, would be used as a guide to set priorities and help determine appropriate treatment intensities.

Special Management Areas

Special Management Areas within the Upper Deschutes RMP boundary with direction common to Alternatives 2-7 include Wilderness Study Areas (WSAs), Research Natural Areas (RNAs), Areas of Critical Environmental Concern (ACECs), and Caves. Some areas have more than one designation. The BLM would establish locatable boundaries for all special management areas.

Areas of Critical Environmental Concern

About 2600 acres would be eliminated from ACEC designation, and about 1800 acres designated ACEC under Alternatives 2 - 7.

All proposed new uses within ACECs would be evaluated for consistency with ACEC values. Some specific prohibitions on uses would be included in the designations for specific ACECs. Common guidance includes limitations on removal of vegetation or rockhounding, disposal of property, or issuing patent-based R&PP leases.

In general, for all ACECs, adjustments out of federal ownership would not occur. Harvest of special forest and range products would not be allowed, except in conjunction with

restoration treatments and/or consistent with the values of the ACEC. In addition, R & PP leases would not be issued for lands within ACECs unless such leases would be non-patent leases and would not impair the values for which the ACEC was designated.

Badlands ACEC

Mineral material sales would not be allowed. Rockhounding or the collection of any rock materials would also not be allowed.

Peck's Milkvetch ACEC

In addition to the management direction Continued Management Direction, the following would apply:

Fire Management: Unless life or property is threatened, off-road use of fire suppression vehicles would not be allowed and fire lines would be limited to hand lines only. Prescribed burning (planned and unplanned) would be allowed.

Minerals: Rockhounding and collection of decorative stone would not be allowed.

Land Ownership: Any in holdings that are acquired within the ACEC would be managed in a manner similar to the surrounding ACEC.

Tumalo Canals ACEC

Under Alternatives 2 – 7 a portion of the historic Tumalo irrigation canals would be designated as an ACEC⁹ and managed specifically for interpretive use. Management direction for this area includes overall guidance for the entire 1050 acre ACEC, and also specific guidance that would apply to a smaller area surrounding the canal features themselves. (See PRMP for more details)

Fire Management: Wildfire would be fought aggressively if within, or threatening the canal features (the area adjacent to and east of Barr Road). Firelines would not be constructed on or adjacent to the canal features and the overall disturbance within the ACEC would be kept to the minimum amount necessary. Prescribed fire would also not be allowed in or around the canal features.

Vegetation Treatments: Treatments would be allowed with restrictions designed to maintain or enhance archaeological and interpretive values.

Special Forest and Range Products: Generally, harvesting of wood products and special forest and range products would not be allowed except in conjunction with restoration treatments or if it is consistent with the values of the ACEC.

Livestock Grazing: Livestock grazing would not be allowed

Minerals: Mining for mineral materials would not be allowed in the south ½ of sections 29 and 30 and the north 1/2 of Sections 31 and 32, T 15 S., R. 12 E., to protect the Tumalo Canals area. Surface occupancy for fluid mineral leasing would not be allowed. Approved plans of operation would have stipulations to protect the values of this ACEC.

Recreation: mountain biking, horseback riding, livestock grazing, rockhounding, OHV use, target shooting, and dispersed camping.

Firearm discharge: The area adjacent to and east of Barr Road would be closed to target shooting.

Rights-of-Way: New rights-of-ways (ROW) would be granted only if no other reasonable route is available. Where new ROW cannot be reasonably accommodated outside of the ACEC, consider first along existing utility corridors, county roads, or BLM system roads. Vacated ROW would be considered for conversion to compatible trails prior to obliteration.

⁹ Note that historic Tumalo Canals is incorporated into the proposed Juniper Woodlands ACECs in Alternatives 3 and 4, while the Tumalo Canals ACEC stands alone in Alternatives 2, 5, 6, and 7. The guidance for the area remains the same and the area intended for special management remains the same under either scenario.

Wagon Roads ACEC

Alternatives 2 - 7 would protect and maintain the segments of the historic Horner, Huntington and Bend-Prineville roads designated as an ACEC. Management of this ACEC would focus on interpretation of these historic resources

Alternatives 2 - 7 would add¹⁰ approximately six miles of historic Horner Road and approximately 5 miles of the historic Bend-Prineville Road to the existing Wagon Roads ACEC. The ACEC would constitute approximately 986 acres; including a 300 foot distance on either side of the road segments to protect associated historic features (see DEIS Map 7). The central and northern segments of the Wagon Roads ACEC located in Township 16, Range 13, Section 21 and Township 15, Range 13, Section 33, respectively (see DEIS Map 7), would be removed from ACEC designation.

Opportunities for the designation of a pedestrian trail system with interpretive signage would be pursued. OHV use would be allowed on designated trails within the 300-foot area on either side of each road (except the southernmost segment); to the extent necessary to create safe and maintainable trail crossings. OHV trails that parallel the historic roads would be located beyond 300 feet from each side of the road to the maximum extent feasible. Special Recreation Permits (SRPs) would be issued for foot traffic events/group use only on the road segments.

The management direction Continued Management Direction would be extended to the new road segments and areas designated this ACEC. Additional management direction common to Alternatives 2-7 is as follows:

Vegetation Treatments: Vegetation and wildlife habitat management would not be allowed unless such projects maintained and enhanced the special values of the ACEC.

Special Forest and Range Products: Generally, harvesting of wood products and special forest and range products would not be allowed except in conjunction with restoration treatments or if it is consistent with the values of this ACEC.

Minerals: An area one half mile on either side of the roads for which this ACEC is designated would be closed to mineral material sales and surface occupancy for fluid mineral leasing. Geophysical exploration would be restricted to protect the special values of this ACEC. Plans of operation would be submitted by prospective applicants and approved by the BLM prior to any development of mining claims. Approved plans of operation would have stipulations to protect the values of this ACEC. Rockhounding and the collection of decorative stone would not be allowed.

Military Uses: Tracked military vehicles would not be allowed on the historic roads. Locations where tracked vehicles would cross the historic roads have been, or would be in the future, determined in consultation with the Oregon Military Department.

Recreation: The ACEC would be closed to the use of paintball guns. Overnight camping and geocaching¹¹ activities south of McGrath Road (i.e., surrounding the segment of Huntington Road in Section 1) would not be allowed. No competitive events would be allowed except at designated trail or road crossing points.

Firearm discharge: The ACEC would be closed to all firearm discharge.

Lower Crooked River ACEC

The designation of the Lower Crooked River ACEC would be eliminated because the area is protected as part of the Chimney Rock Segment of the Lower Crooked River Wild and Scenic River.

¹⁰The additional segments of the Wagon Roads ACEC in Alternatives 2-7 receive the same management guidelines applied to the ACEC in the Continued Management Direction section.

¹¹For this plan, geocaching is defined as leaving any items on BLM administered lands for the purposes of posting or advertising the approximate location of those items for others to find.

Research Natural Areas

Research and educational activities would be encouraged in both RNAs. In addition to the management direction provided in Continued Management Direction, the following would apply:

Vegetation Treatments: Vegetation and wildlife habitat management project work would be allowed if specified in a natural area management plan for the RNA.

Minerals: Both the Horse Ridge and Powell Butte RNAs would be closed to mining for mineral materials.

Recreation: Horse Ridge and Powell Butte RNAs would be closed to mechanized use. No designated roads or trails would be identified, and special recreation permits would not be authorized. Camping would not be allowed. The RNAs would be closed to activities that concentrate use in certain areas, such as geocaching.

Firearm discharge: Both RNAs would be closed to firearm discharge unless legally hunting.

Land Ownership: Recreation and Public Purposes Act (R&PP) leases would not be issued for lands within either RNA unless such leases would be non-patent and would not impair the condition of the natural plant communities.

Wilderness Study Areas

Badlands WSA

In addition to the management direction Common to Alternatives 2-7, the following management direction would apply:

Minerals: Mining for mineral materials and rockhounding would not be allowed.

Recreation: Geocaching and the use of paintballs would not be allowed.

Caves

Cave resources within the planning area would receive common guidance to protect the basic integrity of the system and potential cave biota if they have not been determined to be significant caves under the Federal Cave Resources Protection Act. Those that have been nominated or determined to be significant under the Federal Caves Resources Protection Act would have common general guidance for promoting cave integrity and conditions under which human uses would be allowed, including closing caves to specific activities that are likely to have an adverse effect on cave resources. Additional specific guidance would be provided for Redmond and Pictograph caves.

As directed by the Federal Caves Resources Protection Act (1988), Alternatives 2 – 7 would emphasize managing caves nominated for significance or determined significant with an emphasis on education, research, and protection of cave resources and to manage activities and use to not impair the nominated values for which the cave may be determined significant.

For caves with designated parking areas, the agency would consider providing a visitor register to collect information on the visitors name, purpose, number in party, comments, and use patterns. Caves with high resource concerns and those with active volunteer or stewardship programs would be considered as priorities for visitor registers. In addition, for caves with designated parking areas, signs would be provided with cave information, cave etiquette and Leave No Trace ethics.

General: Acts that would not be allowed:

- Willfully defacing, removing, or destroying plants or their parts, soils, rocks, minerals, or other natural cave resources.
- Smoking.
- Possessing, discharging, or using any kind of fireworks or other pyrotechnic devices.
- Possessing a domestic animal
- Depositing or disposing of human waste
- Digging, excavation, or displacement of natural and/or cultural features.
- Entering without written authorization, if required.

Vegetation Treatments: Clearing of vegetation, except for noxious weeds, would not be allowed within 250 ft of the entrance of caves with significant populations of bats. Similar buffers would be maintained around direct drainages into caves, including sinkholes, cave collapse areas known to open into a cave's drainage system, and perennial, intermittent, or ephemeral streams flowing into caves.

Special Forest and Range Products: Trees would not be harvested in a 150 to 200 ft radius around cave entrances and feeder drainages with slopes greater than 30 degrees.

Minerals: An area ½ mile wide on either side of the centerline along the length of any significant/nominated cave would be closed to mineral material site development and surface occupancy for fluid mineral leasing.

Recreation: Access to all significant/nominated caves would be restricted to foot access only. Group use (commercial and private) of caves would only be allowed under Special Recreation Permit (SRP) authorizations and would be limited to eight people at one time and no more than one tour per cave per day (commercial and private use combined). Group use under permit must comply with seasonal restrictions and provisions of the FCRPA. The following would not be allowed in significant/nominated caves:

- Building, maintaining, attending, or using any fire, campfire, or stove.
- Camping or overnight use
- Mountain bike, horse, or motor vehicle use.
- Use and possession of chalk or hand drying agents for climbing which are not natural appearing.
- Geocaching.
- Possession and use of alcoholic beverages as defined by state law.
- Use of glass containers.

Firearm discharge: Discharging a firearm, air rifle, or gas gun would not be allowed.

Rights of Way: New rights-of-way (ROW) would not be granted within ½ mile of entrance(s) to any significant/nominated cave unless no reasonable alternative routes are available. Where new ROW cannot be reasonably accommodated outside of the ½ mile buffer, consider first along existing utility corridors, county roads, or BLM system roads.

Redmond Caves

Alternatives 2 – 7 would manage the Redmond Caves parcel to protect and maintain the resources of Redmond Caves, including biologic, cultural, and geologic features, and would provide for recreational use that is consistent with management of these cave resources.

The 40-acre Redmond Caves parcel would be designated as Closed to public motorized and mechanized vehicles for management of cave resources. The Redmond Caves parcel would be closed to campfires, overnight use (except under permit), geocache use, paintball use and rockhounding.

Pictograph Cave

Alternatives 2 – 7 would manage Pictograph (Stout) Cave to protect scientific values and cave resources (including habitat for bats), and to meet the requirements of the

FCRPA. Recreation management would be oriented toward interpretive and educational opportunities.

Land Uses

Livestock Grazing

General Guidance

Common to Alternatives 2 - 7 would be direction for continued livestock grazing, while reducing conflicts with and meeting needs of other uses and resources

Prescribed livestock grazing would be allowed to control weeds, reduce fire danger, or accomplish other management objectives, regardless of parcel status (including vacant allotments, areas of discontinued grazing, or Reserve Forage Allotment as described in Alternative 7).

Livestock would be excluded from Mayfield Pond after establishing livestock water source(s) at alternate locations in the allotment.

Livestock Grazing in ACECs, RNAs and WSAs would be managed as described in the Special Management Areas section of this chapter.

Resolving Conflicts

Definitions of urban and rural for Livestock Grazing

In Alternatives 5 and 6, in the livestock grazing section, the following definitions of urban and rural are used: Urban includes all of La Pine, and those areas north of a line running east out of Bend on Highway 20, then up Dodds Road to Alfalfa, north on Johnson Ranch Rd, then east along the mid-slope of the Powell Buttes, around to Millican/West Butte Road, south along State Route 20, then east at Prineville Reservoir. Rural is all other areas.

Estimating Potential for Conflict and Demand

BLM would use a formula to estimate potential for “conflict” and “demand” to help identify where problems are likely to occur. These estimates would be used to prioritize work. The BLM would also set maximum allowable conflict and demand thresholds, and take actions as necessary to keep management costs and conflicts below those thresholds. The maximum allowable conflict/demand levels vary by alternative, and are displayed in Table 2-10 (for Alternatives 2-6, below), and in Table 2-27 (for Alternative 7). Information regarding outcome for specific allotments is provided in Appendix G. In Alternative 5, the maximum allowable “demand” levels shown in Table 2-10 apply only in the “urban” areas (see definition above). In Alt 6 the levels only apply in the “rural” areas. More specific direction is provided in the Livestock Grazing alternative descriptions.

A model or formula is used to help estimate which allotments have the highest potential for problems, or conflicts. Potential conflicts are classified as low, moderate or high (described below). The BLM would then use these estimates to help make decisions about where livestock grazing should continue, and where conflicts might be high enough to warrant modifying or discontinuing grazing now or in the future.

The formula for Alternative 7 is modified from that used for Alternatives 2-6 by the addition of an “ecological conflict” factor. Existing management direction already provides a process for responding to ecological concerns, but this addition would provide decision-makers with a way to consider social, economic, and ecological factors. There are also some minor changes to how social and economic conflict are estimated, including dropping some criteria, adding others, and “weighting” the equation so that some criteria counted for more than others.

Estimating potential for human/livestock conflicts

In Alternatives 2-6, the potential for conflict is estimated using three factors: (1) Residential or resort zoning, (2) Busy roads (paved and/or 45mph+), and (3) Closed range (within a livestock district). Conflict is considered “high” when two or three of the factors listed above exist within 1.4 mile, or where two exist within 1.4 mile and the third within 1.2 mile. “Moderate” conflict is where all of the above factors exist within 1.2 mile, or where one exists more than 1.2 mile away but the other two are within 1.4 mile, or one of them is within 1.4 and the other is within 1.2. All other areas are considered “low” conflict.

In Alternative 7, potential for conflict is estimated using three factors: (1) Miles of residential or resort zoning along allotment boundary, (2) amount of recreational use, and (3) percent of allotment within a special management area (e.g., WSA) that was designated at least in part for “social” values (e.g., visuals, solitude). Factor 1 (zoning) was converted to miles/AUM, with the highest scoring allotment set at 100, and scaled down to zero from there. Factor 2 (recreation) is scored as 75 if the Allotment Categorization Form classified it as “M” on the recreation criteria on that form, and 100 if “H.” For factor 3, the highest scoring allotment is set at 100, and scaled down to zero. If there were only a few scores at the high end for one of the factors, the raw score was multiplied so the scores for the factor were more evenly spread between 0 and 100 (aiming for about 1/3 falling above 67, at the “high” end). This was necessary to make the criteria sensitive enough to register differences between allotments. The factors making up the total social conflict score are weighted equally (each represents 33 percent of the total score).

Estimating potential for demand

In Alternatives 2-6, potential for demand was estimated using two factors: (1) Cost of new fences to enclose private land in closed range, or reconstruct allotment boundaries, and (2) Cost to patrol for cut fences, open gates. These two costs are defined below. Demand for an allotment is defined as low when (1) plus (2) is divided by the number of AUMs in the allotment, and the total is less than 2; moderate is when the score is between 2 and 10; and high when the score is over 10.

Fence maintenance and new fence needs are estimated and would need site visit and permittee input to get a more exact number.

Cost for new fence is assumed to be \$4,000/mile, divided by 10 years since it is not a cost that must be paid annually.

Table 2-10 Grazing Matrix Common to Alternatives 2-6

		Conflict Rating		
		Low	Moderate	High
Demand Rating	Low	Open ¹ in Alts 2, 3 Closed ² in Alts 4, 5, 6	Open in Alts 2 & 3 Closed in Alts 4, 5 & 6	Open in Alts 2, 3 Closed in Alts 4, 5, 6
	Moderate	Open in Alts 2, 3, 4 Closed in Alts 5, 6	Open in Alts 2, 3, 4 Closed in Alts 5, 6	Open in Alts 2, 3 Closed in Alts 4, 5, 6
	High	Open in all Alternatives	Open in Alts 2, 3, 4, 6 Closed in Alt 5	Open in Alts 2, 3, 6 Closed in Alt 4, 5

¹All “Open” allotments are still subject to grazing modification as necessary to reduce conflicts with other uses of public land, to achieve Standards for Rangeland Health, and to meet other goals, objectives, and management direction listed in the Continued Management Direction section.

²In “Closed” allotments, livestock grazing would be discontinued for the life of the plan. The closures would be temporary, subject to review and change during the next planning cycle. Affected permittees would receive 2-year notification unless they waive that right, and they would be compensated for their financial interest in range developments (based on their contribution to the project, minus depreciation). Displaced permittees in good standing would receive priority for permits in vacated allotment and un-allocated AUMs in other allotments.

Patrol costs are assumed to be \$10/mile/week in areas of moderate patrol needs (definition follows), and \$15/mile/week in areas of high patrol needs, multiplied by the number of weeks the allotment is grazed, and divided by the number of pastures in the allotment. High patrol needs fences are those fences in or within 1.4 mile of closed range *and* within 1.4 mile of one of a busy road or residential zoning. Moderate patrol needs fences are those within 1.4 mile of any one of the following: closed range, residential zoning, busy road; *or*, fences along private land boundary where Criteria 3 on Allotment Categorization Form is I (indicating high recreational use of the area) and not meeting the above “high patrol” criteria.

In Alternative 7, potential for demand was estimated using eight factors: (1) Waiting list for permit for allotment, (2) miles of residential or resort zoning along allotment boundary (this factor and factors #3 were calculated the same here as they were under social conflict), (3) amount of recreational use (calculated as above), (4) costs to install required new and maintain existing fence (assuming \$50/mi maintenance and \$4,000/mi new), (5) percent of allotment needing water hauled to troughs, (6) amount of seasonal restrictions on grazing (one season only = 100, two = 50, three = 25, year-round permit = 0, unknown = 50), (7) relative amount of forage (AUMs) in allotment, (8) percent of allotment containing important deer, grouse, and elk habitats. As with the conflict criterion, the high score for each factor is 100, with an even spread of scores between 0 and 100. Factors are weighted as follows: #1 is 20 percent of the total demand score, #2, #3, #4, #5, #7 are each 12 percent, and #6 and #8 are each 10 percent. Waiting list is based on professional judgment (12 years at Prineville District BLM as a Rangeland Management Specialist). The District has not kept a separate list for each allotment in the past.

Estimating potential for ecological conflict

This criterion was only used in Alternative 7. Potential ecological conflict is estimated using the following factors: (1) percent of the allotment failing to meet Standards for Rangeland Health (100 if entire allotment fails and livestock are a causal factor, 0 if meeting standards or if rangeland health assessment has not been completed); (2) percent of allotment containing important deer, grouse, and elk habitats; (3) percent of allotment within a special management area (e.g., WSA) that was designated at least in part for “ecological” values (e.g., Peck’s Milkvetch). Scores were topped at 100 for each factor, and adjusted for an even spread between 0 and 100. The factors are weighted as follows: #1 makes up 40 percent of the total ecological conflict score, #2 and #3 are each 30 percent.

Disturbance Event

After a disturbance event (examples below) which results in undesirable soil or plant conditions, livestock grazing would typically not be permitted (see exceptions, below) the remainder of the calendar year, and through the growing season of the next year. Exceptions would be for cases where such grazing would either not impede site recovery, or where livestock are used as a tool to aid in achieving certain recovery objectives (such as cheatgrass control).

Livestock grazing would resume after an interdisciplinary team visits the site and documents that soil and vegetation have recovered sufficiently from the initial disturbance to support livestock grazing. Disturbance events would include natural and human-induced events including but not limited to wildland fire, prescribed burns, timber management treatments, juniper thins, and rehabilitation seedings.

If a disturbance event does not result in undesirable soil or vegetative conditions, livestock grazing need not be excluded from the pasture. One example of a disturbance not requiring livestock exclusion is an herbicide treatments or juniper thin in an area that has previously been found to meet the Standards for Rangeland Health, and that appears to still meet these standards after the disturbance.

Livestock exclusion after disturbance events would also not be required if livestock would not be trailed through the affected area, and attractants (e.g., water, supplemental feed, salt) are not provided within one mile. Attractants could be closer than one mile if physical barriers (e.g., rimrock, fences) would prevent livestock access to the affected area.

Prescribed or permitted livestock grazing could occur any time after disturbances in pastures containing affected areas if an interdisciplinary team designs and monitors the grazing to accomplish resource objectives (e.g. to control noxious weeds, or assist in getting broadcast seeds worked into the soil).

Minerals

Minerals Materials

The objective common to Alternatives 2-7 is to meet the increasing demand for mineral materials while reducing mining conflicts with recreation, residents, natural resource management and other management objectives. Common to Alternatives 2 - 7 would provide guidance for establishing conflict-demand thresholds at one of three levels (low, moderate, or high) based on potential conflicts with residents, recreational users, and relative importance of the material site. Thresholds for the levels of conflict and mineral material importance are outlined in Table 2-11 – Mineral Conflict and Importance Thresholds.

Public lands not closed to mineral material site development may be explored and developed for mineral materials with consideration for mitigating conflicts with recreation, residents, and natural resource management objectives. Plans of operation for mineral material sites would include measures to mitigate these conflicts. Mineral material sites would not be allowed within 1/8 mile of designated recreation sites or residentially zoned areas. Designated recreation sites that depend up on or exist in mineral material sites generally would not be considered to be in conflict with mining operations for the purposes of setting up a buffer zone. During periods of mining activity, designated recreation sites that depend on or exist in the mineral material site could be temporarily closed.

Table 2-11 Mineral Conflict and Importance Thresholds

Category	Low	Moderate	High
Potential Recreation Conflict Level	Mineral material sites/ roads must be at least ½ mile from designated recreation sites where conflicts with recreation exist, ¹ mining access roads may not cross trails.	Mineral material sites/roads must be at least ¼ mile from designated recreation sites where conflicts with recreation exist* ¹ ; mining access roads may cross trails.	Mineral material sites/ roads must be at least 1/8 mile from designated recreation sites where conflicts with recreation exist* ¹ ; mining access roads may cross trails.
Potential Residential Conflict level	Mineral material sites/ roads must be at least ½ mile from residentially zoned areas. Roads that feed from BLM-administered lands into residentially zoned areas may not be used for mining-related traffic.	Mineral material sites/roads must be at least ¼ mile from residentially zoned areas. Roads that feed from BLM-administered lands into residentially zoned areas may not be used for mining-related traffic.	Mineral material sites/ roads must be at least 1/8 mile from residentially zoned areas. Roads that feed from BLM-administered land into residentially zoned areas may be used for mining-related traffic only if alternate routes are not available.
Potential Importance of Mineral Material Deposit	Alternative ² sources are available	Not applicable	Alternative ² sources are not available.

¹ Designated recreation sites that depend upon or exist in mineral material pits generally will not be considered to be in conflict with mining operations for the purposes of setting up a buffer zone.

² To be considered an alternative source, a mineral material site must be available within 30 miles driving distance of (1) the construction site(s) where the mineral materials would be utilized or (2) the commercial distribution center(s) where the mineral materials would be privately sold as raw materials or as finished products. In addition, an alternative source must not require travel through more than one population center including and limited to Bend, Prineville, Redmond, and Sisters. Alternative site(s) can be eliminated from consideration if the quality of material is demonstrably unacceptable.

Mineral material site operations could be subject to one or more of the following guidelines depending on site-specific factors. For mineral material sites within ½ mile of designated recreation sites and residentially zoned areas, mineral extraction, processing, and equipment operation would be allowed between 7:00 a.m. and 6:00 p.m. Monday through Friday; and for sites located farther than ½ mile from developed recreation sites and residentially zoned areas, those activities would be allowed between 7:00 a.m. and 10:00 p.m. Monday through Friday. No operations would take place at mineral material sites on weekends or certain legal holidays (New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day). Blasting would be allowed for mineral material sites within one mile of developed recreation sites, residential areas, and agricultural use sites involving the raising of animals between 9:00 a.m. and 5:00 p.m. Monday through Friday; and the operator would provide written notification to land owners and inhabitants within one mile at least 48 hours prior to the time blasting starts. For extended blasting operations, such notification would be given at least once each month. No blasting at mineral material sites would be allowed on weekends or any of the previously mentioned legal holidays. (See the Proposed Management Plan for more details on surface mining restrictions).

The need to implement any of these operating and blasting guidelines would be determined through site-specific environmental review on a case by case basis.

Decorative Stone

The collection of mineral materials for decorative stone, landscaping, or other similar uses would not be considered to be "rockhounding" in Alternatives 2-7. Rocks considered to be decorative stone would include but not be limited to basalt, andesite, rhyolite, tuff, pumice, and cinder. Specific forms of these rock types include but are not limited to gravel, rounded river cobbles, basalt columns, flagstone, stepping stones, and boulders.

Mineral specimens, semi-precious gemstones, common invertebrate fossils, and petrified wood would not be considered to be decorative stone for the purposes of this plan (see Rockhounding).

Common to Alternatives 2-7, common use area(s) would be designated for personal and commercial decorative stone collection. Until common use area(s) are designated, the general public would be allowed to collect "small amounts" of decorative stone without a permit provided that (1) only loose rocks (float) on soil are collected, (2) no rocks are removed from outcrops including but not limited to bedrock surfaces, cliff faces, pressure ridges, or other lava flow exposures, (3) the material is collected for noncommercial use (any commercial use would require a permit) and (4) no vehicles are driven off-road or in a manner inconsistent with motorized travel regulations. "Small amounts" are defined in this plan as no more than 1 cubic yard or ton per household per year. This is approximately the amount that can fit in the bed of a full size pickup truck. Decorative stone collection would not be allowed in areas closed to mineral material mining or rockhounding.

After common use area(s) are designated, (1) any collection of decorative stone in the planning area would require a sales contract or free use permit and (2) sales contracts/free use permits to the general public would only be issued for common use area(s) or existing community pits. The collection of decorative stone would not be allowed in areas without common use or community pit designation.

The decorative stone management direction (before and after community pit designation(s)) would not change or alter existing management direction for considering mineral material permit requests from private commercial operators or government agencies. Commercial operators and government agencies may apply for development of new mineral material sites on any lands that are open to that use.

Rockhounding

Rockhounding would be defined in this plan as the non-commercial hobby collection of mineral specimens, semi-precious gemstones, common invertebrate fossils and petrified wood. These rock types include but are not limited to agate, jasper, quartz, calcite, cinnabar, opal, obsidian, botanical (leaf) fossils, and marine invertebrate fossils (clams, snails, etc.). Permits for commercial use generally would not be issued for areas within the boundaries of designated rockhounding sites to protect recreational collecting opportunities.

Rockhounding resources would be managed to provide long-term recreation opportunities while mitigating ground disturbances and discouraging illegal commercial activity and excessive personal use. In all areas open to rockhounding, no person would be allowed to dig or occupy excavations or holes that (1) undermine the root systems of trees, (2) enter into the ground at a non-vertical angle so as to create a tunnel or overhang or (3) have vertical walls that exceed a depth or height of four feet. Where holes or excavations exceed a depth of four feet, the walls of the hole or excavation would be required to be sloped to an angle not greater than 45 degrees from horizontal. All persons excavating, digging or otherwise removing soil to explore for, discover, or remove buried rock materials outside of designated rockhounding site boundaries would be required to completely fill all holes prior to departure from the digging site. In all riparian areas and stream channels including the channel banks, rockhounding activities would be restricted to surface collection only. Stream channels are defined as all perennial, intermittent, and ephemeral channels having defined beds and banks. A stream channel is an open conduit which periodically or continuously contains moving water, or which forms a connecting link between two bodies of water. No person would be allowed to excavate, dig, or otherwise remove soil, sand, or gravel in stream channels to explore for, discover, or remove buried rock materials. The collecting restrictions in stream channels would not preclude casual use for locatable minerals as provided for in 43 CFR 3809.5.

The North Ochoco Reservoir, Eagle Rock, and Fischer Canyon rockhounding sites would be designated, but with different boundaries than for Alternative 1. These rockhounding sites would be designated as all BLM-administered lands within the following areas: (1) North Ochoco Reservoir – SE ¼ Section 31 of T14S R17E, (2) Eagle Rock – NW ¼ of Section 14 and NE ¼ Section 15 of T16S R17E, and (3) Fischer Canyon – Section 9 T18S R17.

Future rockhounding management plan(s) may place collection limits and other regulations on specific sites.

Locatable and Leasable Minerals

Plans of operation for fluid mineral leasing and the development of valid mining claims would include measures to mitigate conflicts with recreation and residents where such conflicts exist.

Forest Products

In Alternatives 2 – 7, harvest of forest products would normally be associated with restoration and fuels treatments and would be designed to meet objectives for forest health, fire hazard reduction, hazard tree removal, special status species management, visuals, recreation and travel management, and wildlife habitat management. The amount of forest products harvested would vary only slightly between alternatives. The location and priorities for harvest may change with the alternatives according to different vegetation management treatments implemented.

Raw material for a variety of forest products would be made available in all alternatives. Objectives for ecosystem and fuels management during the 15-year life of this plan

would result in the production of primarily small diameter material, generally in the range of 4 to 12 inches DBH “(diameter at breast height – 4 ½ feet above the ground). This size of material could be suitable for production of products such as small sawlogs, house logs, posts and poles, chips, fuel biomass, firewood, and various specialty products.

It is anticipated that fuels reduction and forest restoration treatments would also produce a relatively high proportion of green material in the 4-8 inch DBH class. This size of tree has previously been considered “non-merchantable” and was typically disposed of by piling and burning. Due to fire hazard and smoke concerns within the priority wildland urban interface treatment areas, most of this material would be removed off-site in all alternatives. An effort would be made to encourage the development of markets and other outlets that could utilize large quantities of this small size material. The on-site location of temporary portable chippers/grinders, portable biomass/energy production, and new types of specialized equipment for moving and processing this material could be authorized. To maintain site productivity (organic matter and nutrients), limit re-establishment of trees and brush, and discourage cross-country motorized travel, much of the fine materials not utilized (seedlings, saplings, tops, and branches less than 4 inches in diameter) would be left scattered on the forest floor where it would not contribute to ladder fuels.

Special forest and range products would be managed according to sustainability limits and where consistent with other resource management objectives. These products would be harvested by permit only and management would be guided by site-specific NEPA guidance and permit collection regulations (see Table 2-1: Comparison of Alternatives, for forest product volumes produced under each alternative, and Appendix F: Best Management Practices).

Military Uses

Common to Alternatives 2 – 7 would provide management direction to ensure consistency with planned and approved activities with environmental requirements, integrated resource management plans, and conflict resolution with neighbors on public lands authorized for long-term and short-term military use. Long term use of public lands for military training would be authorized by BLM for OMD. Common to Alternatives 2-7 would be the use of at least a minimum of 21,000 acres within the core area of the Biak Training Center for long-term military use.

Use of small areas of concentration which have been treated by providing gravel cover, barriers, road improvements/maintenance or other engineering works to reduce general area resource damage is encouraged.

Visual Resources

VRM Classes that emphasize retention of high visual quality along high use travel routes, on prominent landforms that provide community backdrops, and at recreation destinations such as reservoirs and state parks would be common to Alternatives 2-7.

The Visual Resources Management Classification map (DEIS Map 22) shows the location of visual resource management classes. The following list identifies general areas that are included in each VRM Class in the FEIS/PRMP area:

VRM Class 1 (approximately 32,928 acres):

Badlands WSA
Steelhead Falls WSA
Horse Ridge ACEC/RNA/ISA

VRM Class 2 (approximately 37,590 acres):

Areas visible from Prineville Reservoir (foreground views)
Smith Rock block
Horse Ridge and Dry Canyon
Portions of West Butte area
Dry Canyon in Cline Buttes
Deschutes River corridor
Crooked River corridor
Ochoco Reservoir parcel
Cline Buttes slopes visible from the Redmond area
Wagon Roads ACEC
Powell Butte RNA
Redmond Caves parcel
Little Deschutes River parcel (once acquired)

VRM Class 3 (approximately 88,179 acres):

Skeleton Fire area
West Butte area
Areas visible from Prineville Reservoir (background views)
Smith Canyon area
Immediate foreground view of State Highway 20, 26, 27, 126, Powell Butte Highway, Juniper Canyon Road, Reservoir Road, except where superceded by other VRM Class designations

VRM Class 4 (approximately 246,163 acres):

Covers most of the remainder of planning area

VRM Class 5 (approximately 8 acres):

Crooked River Canyon area north of Chimney Rock Wild and Scenic River segment

Recreation

Common to Alternatives 2 -7 would be to provide and maintain a wide range of recreation opportunities while meeting overlaying resource management objectives within the planning area and urban interface setting. The common objective is to increase the quality of recreation experiences by moving toward an overall designation of road and trail systems throughout the planning area, which, if implemented, would provide more user information, and a consistent set of opportunities that can be accessed by both local and out-of-area visitors. Additional recreation opportunities through new trail development are emphasized, both to increase diversity and to meet projected increases in recreation demand. Common to Alternatives 2 – 7 is provided after management direction to maintain a wide range of recreation opportunities that contribute to meeting projected recreation demand while meeting overlaying resource management objectives within the planning area and urban interface setting.

Common to Alternatives 2 – 7 would identify all lands within the planning area except those located north of Prineville as the BLM High Desert Special Recreation Management Area. The specific components of this SRMA are identified as (See Special Recreation Management Areas Map - FEIS Map 1) :

- Badlands WSA
- Bend/Redmond Recreation Area
- Cline Butte Recreation Area
- Horse Ridge Recreation Area
- La Pine Recreation Area
- Mayfield Recreation Area

- Millican Valley OHV Area
 1. Millican Plateau
 2. North Millican
 3. South Millican
- Northwest Recreation Area
- Prineville Reservoir Recreation Area
- Smith Rock Recreation Area
- Steamboat Rock Recreation Area
 1. Steelhead Falls WSA
- Tumalo Recreation Area

Due to the scattered nature of the public land parcels surrounding and north of Prineville, this area was not identified as part of the SRMA.

All alternatives would have common objectives to manage off highway motorized vehicle and non-motorized vehicle use to provide visitor satisfaction, protect natural resources, provide visitor safety, and minimize conflicts among various users and neighbors. A diverse range of OHV opportunities would be provided, including motorcycle, quad, and Class 2 vehicles (i.e. roads and technical four-wheel drive routes). Designated access points, which include entry points, parking areas, trailheads, and staging areas would be designed and managed to enhance visitor experiences, protect resources, and minimize conflicts with neighboring land owners.

Common to Alternatives 2 - 7 and Continued Management Direction would be designations of BLM-administered lands within the planning area as Open, Limited, or Closed for the operation of Off-Highway Vehicles. Each alternative varies in the amount and distribution of these various travel management designations throughout the planning area. The location and distribution of these travel management designations reflect the overall themes of each alternative. The following criteria are used, along with other resource objectives and goals, in designating travel management objectives for different areas.

Travel Management

Common to Alternatives 2 - 7 would be designations of BLM-administered lands within the planning area as Open, Limited, or Closed for the operation of motorized vehicles. The following criteria are used, along with other resource objectives and goals, in designating travel management objectives for different areas.

Open

Designate areas as 'Open' where there are no compelling resource protection needs, user conflicts, or public safety issues to warrant limiting cross-county motor vehicle travel."

Limited

Designate areas where motorized vehicle use is managed to meet specific recreation and resource management objectives as "Limited". These limitations may include:

1. Restricting the types of vehicles uses in an area
2. Restricting motorized vehicles to designated roads and/or trails
3. Limiting the season or time of use.

Closed

Designate areas where motorized vehicle use should be restricted to protect resources, ensure visitor safety, or reduce conflicts as Closed. Areas are closed to motor vehicle use where recreation management emphasis is on providing non-motorized recreation. Appropriate recreational opportunities would also be provided, while reducing conflicts between recreational users, and between recreational users and adjacent landowners.

Each alternative varies in the amount and distribution of these various travel management designations throughout the planning area. The location and distribution of these travel management designations reflect the overall themes of each alternative and are shown on FEIS Map 3, Recreation and Travel Management Designations – Alternative 7, and on DEIS Maps 8 – 13, Travel Management Designations.

In general, the following travel management designations are common to Alternatives 2-7:

The majority of the Bend/Redmond block, Millican Plateau, North Millican, South Millican areas are designated as “Limited to Designated Roads and Trails”.

Portions of BLM-administered lands in LaPiner and in the Prineville and Prineville Reservoir geographic areas are designated as “Limited to Designated Roads”.

Areas Closed common to Alternatives 2-7 include the Smith Rock area, Barnes Butte, the area south of McGrath Road (a portion of the Wagon Road ACEC), and scattered small parcels along various river corridors.

Group Use/Special Recreation Permits

These alternatives would also provide for projects, programs, and permits that promote a diverse range of recreation opportunities, as well as provide for individual, group, and competitive event recreational use that could not be reasonably accommodated on private land (See the Proposed Management Plan for a complete description of special recreation permits, group use and commercial use).

Wilderness Study Areas

No motorized group use, competitive use, or vending would be allowed in the Wilderness Study Areas, and SRPs would be required for all organized group activities involving greater than 20 participants in the Badlands WSA and 12 in the Steelhead Falls WSA.

Geographic Areas

Allowable uses, allocations and guidelines, which generally vary according to alternative, apply to specific portions of the planning area. Common to Alternatives 2 - 7, the geographic subdivisions would be managed to meet one or more of the following objectives:

- Off highway motorized vehicle use would be managed to provide visitor satisfaction, protect natural resources, provide visitor safety, and minimize conflicts among various users and neighbors. The various geographic areas would be managed to provide a range of OHV opportunities, including opportunities for motorcycles, quads, and Class 2 vehicles (i.e., roads and technical four-wheel drive routes) and opportunities for all day/weekend rides as well as shorter trails and play areas closer to urban areas.
- Non-motorized recreation opportunities would also be provided to offer visitor satisfaction, protect natural resources, and minimize conflicts among users and neighbors.
- Designated access points, which include entry points, parking areas, trailheads, and staging areas, would be added to enhance visitor experience, protect resources, and minimize conflicts with neighboring land owners.
- Developed or urban based recreation opportunities would be provided while minimizing duplication of services among agencies and support local, regional, and national recreation strategies. Improvements that allow for easier pedestrian access

and encourage day use and interpretive activities while minimizing conflicts with adjacent landowners would be provided where practicable.

- Recreation projects and programs that promote recreation management objectives and support community economic strategies would be provided.
- Competitive and group events would be provided for when that use could not be reasonably accommodated on private land.

Bend/Redmond

The main block located between State Highway 126 and Powell Butte Highway would be designated as Limited to designated roads and trails; open year-round (see DEIS Map 9). Highway 97 parcel would be designated as Closed to motor vehicles. The 1,360 acre area surrounding the southern portion of the Wagon Roads ACEC would be designated Closed to motor vehicles.

Cline Buttes

The main block (the area between Cline Falls Highway and Fryrear Road) would be Limited to designated roads and trails. The following parcels would be designated as Closed to motorized vehicles:

- Harper Road Parcel
- Youngs Avenue Parcel
- All portions of the Cline Buttes block located east of the Deschutes River, including the Jaguar Road parcel
- BLM-administered parcels adjacent to Cline Falls State Park

Horse Ridge

The following areas would be Closed to motor vehicle use:

- Small parcels surrounding Conestoga Hills Estates.
- The BLM-administered lands bounded by State Highway 20 on the east, Rickard Road on the south and private lands to the west and north.
- Horse Ridge ACEC/RNA.
- The Skeleton Fire area between the Deschutes National Forest boundary, Old Highway 20, the private lands at Gosney Road, and Horse Ridge would be managed for motorized use on designated roads only.

La Pine

Motor vehicle travel would be Limited to a designated system throughout the majority of the area. Approximately 10 small, isolated parcels (generally 40 to 320 acres in size) would be designated as Closed to motor vehicle use. Once acquired, the Little Deschutes River parcel located north of State Recreation Road would be designated as closed to motor vehicle use. Administrative entry for critical activities to ensure public health and safety (i.e. fire suppression and hazardous fuels treatments) would be granted on a case-by-case basis. The focus on providing developed recreation opportunities is to explore R&PP lease options.

Mayfield

The Airport Allotment and the area within the fence around Mayfield Pond would be Closed to motor vehicles.

Millican Plateau

The Millican Plateau OHV area would be maintained for year-round OHV use on designated roads and trails (the size of the area and seasons of use may vary by alternative). The following areas would be Closed to motor vehicles:

- Powell Butte ACEC/RNA
- Isolated BLM-administered parcels within the Juniper Acres subdivision
- Isolated block of public land on top of Powell Butte (except for a designated entry road and parking area if private lands or an easement is acquired that provides legal access to BLM-administered lands).
- Millican Cliff area on east side of Millican/West Butte Road

North Millican

The North Millican OHV area would be maintained for OHV use on designated roads and trails (the size of the area, trail density, and seasons of use may vary by alternative). The ODOT Pit Play Area would be Open year round. Hill climbs would be closed and rehabilitated if necessary.

Prineville

The following areas would be designated as Closed to motor vehicles:

- The 160-acre Barnes Butte Parcel
- The 640-acre Ochoco Reservoir parcel
- The Dry Canyon parcel located in T 15 S., R 14 E., Sec. 3

Prineville Reservoir

Motorized travel in the Taylor Butte area would be Limited to designated roads.

Steamboat Rock

The following areas would be designated Closed to motor vehicles:

- All isolated parcels northwest of Redmond would be designated as Closed to motor vehicles year-round, except for BPA powerline parcel¹².
- BLM-administered parcel at Crestridge Estates.
- Both BLM-administered parcels at Tetherow Buttes
- The BLM-administered parcel adjacent to Lower Bridge Estates
- Approximately 120-acre area of BLM-administered land north of Parkey Road and NW 81st Street in Crooked River Ranch.
- Vehicle access to Steamboat Rock would be limited to designated parking areas, in order to control the expansion of cleared areas surrounding the rock.

Transportation and Utilities

Management direction Common to Alternatives 2 – 7 would add guidance in the areas of regional and local transportation systems, utility corridors, and future new or expanded rights-of-way. Management direction Common to Alternatives 2 – 7 would emphasize regional and local integrated transportation planning, provide transportation corridor allocations for anticipated needs and provide a mechanism to reduce the amount of redundant or unneeded roadways and minimize the fragmentation of wildlife habitat and public land ownership patterns.

State and county road systems form the backbone of the road system on public lands, comprising almost all of the arterial system and the major portion of the collector system.

¹²This area, due to multiple access points and private property boundaries, would be difficult to close.

This arterial and collector systems also contribute heavily as collectors, so that ROWs such as electrical lines and telephone lines are concentrated into the same narrow area.

Regional Transportation

Common to Alternatives 2 - 7 would be the designation of a transportation corridor for the relocation of State Highway 126 to avoid the proposed runway expansion and subsequent protection zone. The proposed corridor would be approximately 1.2 miles wide and extend for approximately 1.2 miles (see FEIS Map 2). Until a final determination of the need for that corridor to occur on public lands was made, other uses within that area would not preclude future use of the area that purpose.

Local Transportation

Management direction Common to Alternatives 2 - 7 would establish an integrated, designated transportation system within the planning area with road management objectives that would include designated maintenance levels, vegetative condition, and the purpose for access. Local roads may be opened or closed to meet resource needs. The number and location of roads that would be designated collectors varies by alternative. Local roads would not be designated under any alternative, but would be designated during subsequent site-specific plan implementation.

Management direction Common to Alternatives 2 - 7 would provide for designating future site-specific locations and numbers of recreation and travel access points and development standards. Guidelines would be provided for working with state and local governments to eliminate unsafe access points for both roads and trails, and to reduce potential conflicts between motorized recreation and other uses.

Management for local roads that primarily provide access to BLM-administered lands would include criteria Common to Alternatives 2 - 7 that would be used in the future to designate specific roads that would become part of the transportation system. This includes, but is not limited to, consideration for public access for recreation or other authorized land uses, emergency access for rural residents, fire and resource protection needs, and wildlife habitat disturbance or fragmentation. The road system needed for OMD use would be retained. The multi-use trail system developed in the Bend-Redmond block would be created to function with portions closed if needed to minimize conflicts with OMD training exercises. The road and trail system goal for the main block would be limited to a range of approximately 3.0 to 5.0 miles per square mile.

The differences in the transportation systems for each of these alternatives are highly dependent upon future decisions concerning the local road configuration. The two resources most likely to influence these configurations are recreation and wildlife. In general, those areas with "primary" wildlife emphasis are likely to have fewer local roads that remain open compared to areas with general wildlife emphasis. Non-motorized categories of recreational use include designations labeled "non-motorized emphasis" and "non-motorized exclusive". Areas designated as non-motorized emphasis allow motorized use on roads, but not on trails. Non-motorized exclusive areas are closed to all motorized uses. In some cases, areas that have a non-motorized recreation emphasis and a primary wildlife emphasis would have the fewest future local road designations.

Right-of-Way Corridors

New areas identified as priority by the Western Utility Group in 2002 would be added to the area designated in the Western Regional Corridor Study of 1993. These areas are identified as "Western Utility potential corridors." All existing rights-of-way would be designated as "future local corridors" to facilitate collocation of compatible uses.

New or expanded right-of-way projects would require appropriate mitigation to reduce unnecessary roads in an area and to minimize the fragmentation of public lands. Appropriate mitigation may include but not be limited to vacating or transferring jurisdiction of roads no longer needed in an area, seasonally or permanently closing other roads within an area, limiting seasons or amounts of uses within an area, or seeding and rehabilitating areas in the vicinity of new or expanded projects.

Land Ownership

Alternatives 2 - 7 would identify lands for retention based on resource values and overall management objectives; lands for disposal that generally do not provide substantial resource, public, or tribal benefits that may not be cost effective for the BLM to manage or that would represent a greater public benefit in other ownership; and lands for community needs and uses.

In general, Alternatives 2 - 7 would provide direction to manage lands to improve the effectiveness of habitats and management capabilities, and identify desirable acquisition parcels based on overall resource values and management and administrative objectives.

The United States, through BLM, owes the State of Oregon, through the Department of State Lands (DSL), several thousand acres of land, called “in lieu” lands. BLM is seeking in this plan to repay DSL by providing parcels identified as Community Expansion. When communities request lands that are Community Expansion, BLM would request that DSL consider requesting those lands as “in lieu”. If DSL acquired the lands, they could then transfer them to the communities that requested them, which would provide public lands for community expansion while also relieving BLM of its debt. When public lands are selected for community purposes, they would be evaluated for compatibility with in lieu selection by Oregon Division of State Lands.

Public Health and Safety

Firearm Discharge

Common management direction would minimize the chance of errant firearm discharge toward public land users and adjacent residents, provide safe and compatible recreation opportunities, and protect developed facilities, and natural and cultural resources. Common to Alternatives 2 - 7 management direction would also emphasize a reduction and eventual end to dumping, especially in habitual dumping areas, reducing the potential for human-caused wildland fire in high-risk areas, and an increase in the enforcement of existing Oregon state and local laws.

Common to Alternatives 2 – 7, management direction would minimize risk of errant firearm discharge to users of public lands and neighbors, and provide safe and compatible recreation opportunities. To meet these objectives, some public lands would be closed to all firearm discharge¹³ or firearm discharge unless legally hunting¹⁴ now or in

¹³A closure to firearm discharge would not apply to:

1. BLM personnel including but not limited to: Acting in defense or protection of an individual, dispatching a critically injured animal for humane purposes, or dispatching a dangerous or damage causing animal, and
2. Other government personnel in emergency situations, and
3. Discharge of projectiles with a limited range where, should the shooter miss their target, the projectile is likely to hit the ground before hitting other unintended targets including but not limited to: A bow or compound bow and arrow, a slingshot, a BB gun, or a paintball gun, and
4. Discharge of weapons utilizing “blank” ammunition where no projectile is discharged including but not limited to: Blanks for dog training purposes or by the military for official training purposes.

¹⁴ Hunting is defined as “To take or attempt to take any wildlife by means involving the use of a weapon or with the assistance of any mammal or bird (ORS 496.004 (10)).”

the future. Alternatives 2 – 7 would include a common emphasis to coordinate with local governments to reduce the risk of errant firearm discharge in and around residentially zoned¹⁵ areas adjacent to BLM-administered lands. Decisions concerning areas open or closed to firearm discharge would consider numerous factors, including those listed below. These factors provide a framework for present and future decisions that would protect resource values at risk, preserve public health, safety, and welfare, minimize user conflicts, and maintain consistency and cooperation. Tables 2-12 and 2-13 describe areas that would be closed¹⁶ under Common to Alternatives 2 - 7 management.

High Density Use Areas – Lands may be closed to firearm discharge based on an evaluation of the present and future intensity of recreational use and other relevant factors including but not limited to: Incidences of dangerous firearm discharge (e.g. BLM firearm discharge citations, reports of recreationists being hit, or nearly hit by firearm discharge), type of recreational activity, compatibility of activities, type and size of recreational groups, geography, topography, presence of facilities (parking lots, bathrooms, roads, trails, interpretive signs and exhibits), land status of surrounding properties, and ease of closure enforcement.

Compatible Recreation Opportunities – Areas with a non motorized exclusive recreation emphasis would be closed to all firearm discharge, or firearm discharge unless legally hunting.

Natural Resource Protection – BLM-administered lands with reoccurring firearm discharge problems, or with developed facilities, or lands containing important natural and cultural resources (including but not limited to unique natural resources, sensitive species, geologic features, and historical and archaeological remains) may be closed to all firearm discharge or firearm discharge unless legally hunting.

Intergovernmental Cooperation – Cooperative closures would be considered where city, county, state or federal agencies that own, manage, or have legal jurisdiction over adjacent lands have established similar closures. These types of closures would include but are not limited to, closures adjacent to residential areas with similar city or county-

Table 2-12 Closed to All Firearm Discharge

Geographic Area	Objective 1	Objective 2	Objective 3
Bend/Redmond (Immediately west of Cline Falls State Park, Redmond Caves, isolated 40-acre parcel with white bridge along Hwy. 97, Young Avenue isolated parcel, BPA substation)	X	X	X
Cline Buttes (2 triangular isolated pieces east of Middle Deschutes River, Jaguar Road isolated parcel)	X	X	X
Horse Ridge (40-acre and 80-acre peninsulas on the west side of the Conestoga Hills subdivision)	X	X	X
La Pine (8 isolated parcels north of La Pine)	X	X	X
Northwest (Fremont Canyon Bouldering Area)	X	X	X
Prineville Reservoir (160 acres surrounded by Prineville Lake Estates, Units 1&2 subdivision)	X	X	X
Steamboat Rock (All isolated pieces)	X	X	X

¹⁵ May apply to other types of land use zones with non-conforming uses, and high-density residential developments in non-residential zones.

¹⁶ All closures provide for the authorized officer to make exceptions on a case-by-case basis.

Table 2-13 Closed to Firearm Discharge Unless Legally Hunting

Geographic Area	Objective 1	Objective 2	Objective 3
Badlands (½ mile around Reynolds Pond)	X	X	X
Horse Ridge (Horse Ridge RNA)	X	X	X
Mayfield Pond (½ mile around Mayfield Pond, ½ mile around Alfalfa Pond)	X	X	X
Millican Plateau (Powell Butte RNA)		X	X
Northwest (3 isolated 40-acre parcels, 1 isolated 80-acre parcel, 1 isolated 120-acre parcel)	X	X	X
Prineville (Powel Buttes)	X	X	X
Prineville Reservoir (Isolated and limited contiguous BLM-administered lands east of the Crooked River, north of the WSR segment)	X	X	X
Smith Rock (All BLM-administered lands in the Block)	X	X	X

wide closures, state or county parks, or areas within urban growth boundaries. Exact area and conditions of these closures would be determined through site-specific analysis, considering factors such as things such as the ease of boundary identification and local conditions, but would generally be between 150 yards and one mile in depth.

Habitual - Illegal Dumping Areas

Common to Alternatives 2 - 7 management direction would emphasize reducing opportunities for illegal dumping of residential, commercial, industrial, and hazardous waste throughout the planning area, and especially in habitual dumping areas. Closure or restriction of user-created travelways or local roads that access habitual dumping areas would serve as the primary tool to reduce dumping.

While dumping is widespread throughout the planning area, the following habitual dumping sites have been identified as being especially problematic:

1. South of Prineville along Millican/West Butte Road;
2. South of Prineville at Juniper Canyon;
3. South of Prineville off Remington Road;
4. South of O'Neil Highway and west of the North Unit Canal
5. East of Redmond and west of the North Unit Canal;
6. South of Redmond along Airport Avenue;
7. Northeast of Bend off of the Powell Butte Highway;
8. Immediately north and south of Alfalfa Market Road;
9. Barr Road in the southern portion of Cline Buttes
10. Lands at the State Highway 126/Barr Road/Buckhorn Road intersection
11. Steamboat Rock area west of Terrebonne and South of Crooked River Ranch;
12. Numerous locations in La Pine.

Campfires

Common to Alternatives 2 – 7, management direction would provide for public health and safety and appropriate recreation opportunities, and reduce the risk of wildland fire associated with high use, habitual problem areas and/or special management considerations.

Alternatives 2 – 7 would close the following areas to campfires seasonally, from June 1 to October 15. These fire closure periods could be changed on a case by case basis, if fire risk changes.

- All BLM-administered parcels in the Steamboat Rock block;
- Harper Road parcel in Cline Buttes;

The following areas would be closed to campfires all year in Common to Alternatives 2 - 7:

- Powell Butte RNA;
- Horse Ridge ACEC/RNA;
- Wagon Roads ACEC;
- Tumalo Canals ACEC;
- BLM-administered parcels adjacent to Cline Falls State Park;
- Redmond Caves parcel;
- All designated parking areas, staging areas, and trailheads unless specifically authorized and posted.

Law-Enforcement

Common to Alternatives 2 – 7, management direction would help promote the agency goal of maintaining a consistent and cooperative working relationship between local, state, and federal law enforcement, streamlining regulations where possible to improve that cooperation. This would be accomplished by providing supplementary rules to incorporate existing state law into federal regulations. Existing state laws and prohibitions that would be incorporated include:

- Operation and use of a motor vehicle on public lands in violation of Oregon State motor vehicle laws;
- Possession and or use of alcoholic liquor in violation of any Oregon State alcohol liquor laws;
- Taking possession of, occupying, or otherwise using public lands for residential purposes without a permit from the Bureau of Land Management;
- Possession and or use of a firearm in violation of any Oregon State firearm laws.

Archaeology

Alternatives 2 – 7 would protect “At-Risk,” significant archaeological resources from accidental or intentional loss due to human activities and natural causes. The locations of “At-Risk,” significant archaeological resources would be withdrawn from the activities of surface disturbing mineral material development. “At-Risk,” significant archaeological resources shall include, but not be limited to, the area around Redmond Caves, identified segments of the Horner and Bend-Prineville historic roads, an identified segment of the old Tumalo Canals, the area in the vicinity of Pictograph Cave, and the area near Steelhead Falls. Inventories are conducted to determine the amount, extent and nature of the cultural resource base in the planning area.

In addition, Alternatives 2 – 7 would emphasize increasing the public’s opportunity to learn about and enjoy the cultural, educational, and recreational uses of heritage resources by interpreting the identified “At-Risk,” significant archaeological resources found within the planning area.

Interpretative developments would be based on combined evaluations of:

1. Severity and immediacy of threats (see Table 2-14)
2. Priority ranking of at-risk significant archeological resources (Table 2-15)
3. Opportunities for partnerships/ cost sharing (Table 2-16)
4. Opportunities for interpretive and public education products as noted in Table 2-17 (“At-Risk,” significant archaeological resources that have yet been discovered can also be factored into the table for prioritization).

Table 2-14 Severity and Immediacy of Threats to Significant At-Risk Resources.

<u>Historic Tumalo Canal</u>								
	Soil Compaction	Vandalism	Artifact Collection	Erosion	Surface Disturbance	Dumping	Fire	Total
Severity of threat	2	1	1	2	2	1	1	10
Immediacy of threat	3	1	2	2	2	1	1	11
Total	-----							21
<u>Historic Horner Road</u>								
Severity of threat	3	1	1	1	3	1	1	11
Immediacy of threat	3	1	1	1	3	2	1	12
Total	-----							22
<u>Historic Bend-Prineville Road</u>								
Severity of threat	3	1	1	2	2	1	1	11
Immediacy of threat	1	1	1	1	1	1	1	7
Total	-----							18
<u>Steelhead Falls</u>								
Severity of threat	1	1	1	1	1	1	1	7
Immediacy of threat	1	1	1	1	1	1	1	7
Total	-----							14
<u>Redmond Caves</u>								
Severity of threat	2	3	1	1	1	3	3	14
Immediacy of threat	2	2	2	1	2	3	2	14
Total	-----							28
<u>Pictograph Cave</u>								
Severity of threat	1	2	2	1	2	1	2	11
Immediacy of threat	1	1	1	1	1	1	1	7
Total	-----							18

Numerical ranking of threat where, Low=1; Moderate=2; High=3
 Severe = intense, serious, extreme, unrelenting. Immediate = direct/indirect.

Table 2-15 Priority Ranking of At-risk Significant Archaeological Resources

At-Risk Resources	Severity & Immediacy of Threats	Significance of Heritage Property ¹	Opportunities for Partnerships/ Cost-Sharing	Opportunities for Interpretive & Outreach Products	Weighted Ranking (max. 500)
Weight	30%	50%	10%	10%	100%
Horner Road	3	3	3	5	320
Tumalo Canals	3	3	3	5	320
Redmond Caves	4	1	4	5	260
Bend/Prineville Road	2	2	2	2	200
Steelhead Falls	2	1	2	2	150
Pictograph Cave	2	1	1	2	140

Weighted ranking is determined by multiplying severity and immediacy of threats, heritage property significance, and opportunities by their respective weight percentages.

(Example): Horner Road: $3 \times 30\%$; $3 \times 50\%$; $3 \times 10\%$; and $5 \times 10\% = 320$.

RANKING KEY

Severity/Immediacy of Threats:

5 = 35-42
 4 = 27-34
 3 = 19-26
 2 = 11-18
 1 = 0-10

Potential Significance of Heritage Property

5 = A, B, C, D, & Discretionary
 4 = A, B, C, D
 3 = Three of A, B, C, or D
 2 = Two of A, B, C, or D
 1 = One of A, B, C, or D

Opportunities for Partnerships/Cost-Sharing

5 = 100% of participation/ funding likely
 4 = 80% of participation/ funding likely
 3 = 60% of participation/ funding likely
 2 = 40% of participation/ funding likely
 1 = 20% of participation/ funding likely

Opportunities for Interpretive & Public Outreach Products

5 = 5 or more products
 4 = 4 products
 3 = 3 products
 2 = 2 products
 1 = 1 products

¹The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

- (A) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (B) that are associated with the lives of persons significant in our past; or
- (C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (D) that have yielded, or may be likely to yield, information important in prehistory or history.

Table 2-16 Opportunities for Partnerships and Cost-Sharing

	Redmond Caves	Steelhead Falls	Horner Road	Bend-Prineville Road	Tumalo Canals	Pictograph Cave
City of Redmond	X					
CTWS	X	X				X
Deschutes County			X	X		
Deschutes NF	X					
ASCO	X	X	X	X	X	X
Deschutes Co. Hst. Soc.			X	X	X	
Tumalo Irrigation Dist.					X	
BLM Rec. Program	X	X	X		X	
Other Interested Parties						
Total	5	3	4	3	4	2

Numerical ranking of Partnership / cost-sharing opportunities where, 1-2 opportunities =Low; 3-4 opportunities=Moderate; greater than 4 opportunities=High.

Table 2-17 Opportunities for Interpretive/Public Outreach Products

	Redmond Caves	Steelhead Falls	Horner Road	Bend-Prineville Road	Tumalo Canals	Pictograph Cave
Signs	X	X	X	X	X	
Kiosks			X		X	
Self-guided Tours	X		X	X	X	
Brochures	X		X		X	
Interpretive Trail	X		X		X	
Tribal Input	X	X				X
Total	5	2	5	2	5	1

Numerical ranking for development of Interpretive / Public Outreach products where, 1-2 products =Low; 3-4 products=Moderate; greater than 4 products=High.

Alternative 2

Alternative 2 would provide for ecosystem health and diversity by focusing efforts on maintenance of current conditions as described under the Key Concepts, and would anticipate lower amounts of treatment acres, especially prescribed fire acres, than alternatives with an historic emphasis. Alternative 2 would slightly increase the amount of secondary wildlife habitat emphasis, but would not increase the amount of area managed for primary habitat emphasis over the current condition¹⁷. There would be no additional management direction over that Common to Alternatives 2 - 7 for riparian areas, water quality or quantity, or Special Management Areas.

There would be no change in areas available for salable minerals and only a very slight change for livestock grazing from those identified as Common to Alternative 1.

¹⁷ For this comparison, areas designated as crucial wildlife habitat in the Brothers - La Pine Resource Management Plan or as a result of other cooperative designations like winter closure areas were assumed to reflect a "primary" designation as used by the Upper Deschutes RMP.

Estimated forest or range products are based on the expected amount of treatment acres (in addition to the Wildland-urban interface (WUI) treatments identified as Common to Alternatives 2 - 7), and are expected to be at about 120,000 cubic feet (600,000 board feet) for Alternatives 2, 4, and 5. Alternative 2 would increase the area available for long-term military use over Alternative 1 by about 7,000 acres.

Recreation emphasis in Alternative 2 would be on providing mixed or multiple use areas with shared facilities. Areas managed exclusively for or with a non-motorized emphasis for trails would be increased over Alternative 1 by about 17%, but would provide the least amount of exclusive non-motorized recreation emphasis of all the alternatives. Most of the geographic areas would emphasize recreation on designated motorized roads or roads and trails, with about 90% of the area available for motorized use on designated roads and trails during the winter use season.

Alternative 2 has the most land designated for retention (Z-1), of all of the alternatives, and the lowest amount of lands available for retention with the possibility of exchange (Z-2). The total amount of land classified for disposal (Z-3) is slightly lower than Alternative 1, but higher than most of the other alternatives. Lands classified as Community Expansion (CE) lands are increased over Alternative 1 and reflect more current information about community needs. There are no special conditions tied to CE lands under Alternative 2.

Designated transportation systems would not change substantially over those in Alternative 1. Alternative 2 would include the designation of a transportation corridor south of Redmond to Deschutes Junction, and would anticipate future local road densities lower or seasonally restricted in areas of high wildlife emphasis, or areas designated for non-motorized emphasis. In accordance with elements Common to Alternatives 2 - 7, designation of a new transportation corridor would anticipate future relinquishment of a similar amount of historic roads in the Bend-Redmond geographic area.

Alternative 2 would have a 1 percent increase in the area closed to all firearm discharge compared to Alternative 1, and about a four percent increase in the area that would be closed to firearm discharge unless legally hunting. The goal of these actions would be to reduce the potential for errant firearm discharge to affect ACEC resources, and to increase compatibility with the recreation emphasis of some of the geographic areas.

This alternative also assumes inclusion of all elements listed in the Continued Management Direction and Common to Alternatives 2-7 sections.

Ecosystem Health and Diversity

Vegetation

Alternative 2 would emphasize maintenance and restoration of native plant and animal communities throughout their current range with management activities in priority areas according to specific resource management objectives. Alternative 2 would emphasize restoration of areas identified as “high priority for restoration” to grass and shrub-steppe communities. These areas are generally where western juniper has expanded in area or density, and is affecting the hydrologic function of the area. Management efforts would protect and promote the health and integrity of old-growth juniper woodlands and savanna¹⁸ throughout its current range. In lodgepole and ponderosa pine forest

¹⁸The terms “woodland” and “savanna” in the context of this RMP encompass all components of the ecosystem. An “ecosystem” includes all plant and animal life, in addition to physical factors such as soils, water, and geology. The tree component is dominated by western juniper, including both old-growth and younger trees. Woodland management also considers the understory components of the community (shrubs, grasses and forbs). Sagebrush-dominated openings and riparian and wetland vegetative types are also found within the woodlands.

ecosystems, objectives would promote healthy and diverse forest systems that would reduce the occurrence of uncharacteristically large and severe disturbances. Management emphasis would be on maintaining or mimicking natural disturbance regimes so that stands are resilient to periodic outbreaks of insects, disease and wildland fire. Ponderosa pine would maintain a dominant or co-dominant status with lodgepole pine, including existing late and old structure habitat, throughout its current range.

In general, treatments for ecosystem health and habitat patch size would be smaller under alternatives that emphasize maintenance and restoration of the current range of vegetation (Alternatives 2, 4, and 5) than those that emphasize an historic range (Alternatives 3, 6 or 7). Treatments would be more focused on accomplishing specific objectives for each of the priority areas and fewer total acres would be treated compared to historic range alternatives. There would be a higher proportion of small and intermediate sized ponderosa and lodgepole pine. Stand density would be higher and average diameter of trees would be smaller. Over time, understory thinning would produce a two to three layer canopy structure in most ponderosa pine stands.

In general, Alternative 2 would treat acres annually with prescribed and mechanical methods over the next 15 years (see also Comparison of Alternatives, Table 2-1). Prescribed fire would be expected to treat approximately 1,265 acres in years 1 – 5, and approximately 5,253 acres in years 6 – 15 (58,855 acres total). Mechanical methods would be used to treat approximately 11,385 acres in years 1 – 5, and approximately 109,455 acres in years 6 – 15 (109,455 acres total).

Riparian and Aquatic

In addition to those areas treated in all action alternatives, Alternative 2 would treat 5,800 more acres of vegetation along 37 miles of perennial streams including river canyon segments of the Deschutes River upstream of Lower Bridge, and the Crooked River in the vicinity of Smith Rocks State Park and within the Lower Crooked Wild and Scenic River downstream of the Hwy. 97 bridge. Vegetative treatments would occur along 657 miles of intermittent and ephemeral stream channels. Reduction of juniper within riparian areas would benefit riparian plant communities by reducing competition with juniper.

Wildlife

Planning Area

Alternative 2 highlights many of the elements of the wildlife management strategy that are Common to Alternatives 2 - 7. These components are combined with the vegetation, land uses, special management area, recreation, and transportation strategies to reflect an overall emphasis on managing multiple-use in many of the geographic areas.

General management emphasis for terrestrial source habitats would be to provide for multiple species needs within current species range in conjunction with vegetation community distribution. Management would emphasize re-patterning vegetation patch size and distribution in habitat areas to be more consistent with characteristic natural disturbance regimes and ecosystem characteristics.

Under this alternative, management emphasis of locally important wildlife species such as deer, elk, pronghorn, or sage grouse would be to maintain or improve habitats to support healthy productive and diverse wildlife populations, and, where consistent with habitat capabilities and national conservation direction, contribute to meeting state wildlife species management objectives for deer, elk and pronghorn. General wildlife habitat emphasis by geographic area is displayed in Table 2-3, Wildlife Emphasis Areas – All Species Habitats.

Geographic Areas

Under Alternative 2, Wildlife Emphasis Levels would be the same as outlined for Common to Alternatives 2 - 7. Wildlife habitat emphasis by specific geographic area and species of local importance can be found in Tables 2-4 – 2-8, Wildlife Emphasis Areas by Species.

This alternative would manage approximately 25 percent of the planning area with a Primary emphasis, 5 percent with a Secondary emphasis, and 70 percent with a General emphasis for wildlife (see Table 2-1, Comparison of Alternatives).

Special Management Areas

Areas of Critical Environmental Concern

No new ACECs are designated under Alternative 2. ACEC designations and management direction would be the same as Common to Alternatives 2-7. Total acres designated as ACEC (existing and new) under this alternative are 23,912.

Caves

Portions of Pictograph Cave would be closed to the installation of bolted climbing routes to protect archaeological resources. Installation of bolted climbing routes would be allowed in approved areas within the cave after site-specific resource survey work. Seasonal closures would be maintained for bat hibernacula from October 15 – May 1.

Land Uses

Livestock Grazing

In this alternative (as in Alternatives 2 - 7), the BLM would use a formula to estimate potential for conflict and demand to help identify where problems are likely to occur (for additional details of how this formula works, see Common to 2-7 section in this chapter, and Chapter 4, Livestock Grazing Assumptions). This alternative does not include any management changes to reduce conflicts, other than those already listed in Continued Management Direction and CT2-7. Livestock grazing would continue to be allowed regardless of level of conflict or demand.

Minerals

Management guidelines would provide some standardized mechanisms for mitigating mineral development conflicts with recreation and residents, primarily focused on establishing setbacks defined in Common to Alternatives 2–7.

Mineral material sites would not be developed within 1/8 mile of residentially zoned areas or designated recreation sites. Roads under BLM jurisdiction that feed into residentially zoned areas could be used for mining-related traffic only if alternate routes are not available. Under this alternative, approximately 349,199 acres would be available for mineral material sales. Seasonal restrictions on all mineral operations would apply to 11,327 acres and surface occupancy for fluid mineral leasing would not be allowed on 38,151 acres (see DEIS Map S-23, Minerals Alternative 2).

Forest Products

Harvest of commercial timber and other wood products would occur primarily in conjunction with fire hazard reduction and ecosystem restoration treatments within the priority project areas identified under Vegetation – Alternative 2. Smaller project areas based on more focused resource objectives would produce a slightly smaller yield

of forest products than under Alternative 3. Priority treatments that could produce commercial forest products would be based on maintenance of existing range of ponderosa pine and vegetative treatment objectives for fuels, forest health and wildlife habitat (see Table 2-1 Comparison of Alternatives for forest product volumes produced under each alternative).

Military Use

Under Alternative 2, approximately 36,400 acres would be permitted for military use.

Management efforts would ensure consistency of planned and approved activities with environmental requirements, integrated resource management plans, and conflict resolution with neighbors on public lands authorized for long-term and short-term military use.

Military training would be permitted as shown in approximately 36,397 acres of the BLM-administered lands located south of the O'Neil Highway; north of the Bend Sewage Treatment facility, Bend Airport, and BLM Road 6589-B; east of Highway 97; and west of the private lands within the Powell Butte community (DEIS map 35). From the current permitted area, the boundary would be adjusted in Areas C and E (lands east and south of the currently permitted area) to reduce concentration of military training on remaining lands, straighten boundaries, and expand the safety buffer around LZ/DZ in Area E. The boundary of the area north of Highway 126 would include a ¼ mile buffer inside the public lands boundary on the east side, except for the access from the north from the O'Neil Highway.

Military activity within ¼ mile of private lands would be limited to motorized travel on designated routes for ingress to and egress from the training area and activities that do not create dust or noise.

Recreation

Alternative 2 would emphasize the use of shared road and trail facilities for all users, to a much greater degree than all other action alternatives and Alternative 1. Approximately 77 percent of the planning area is managed for multiple use on shared facilities in Alternative 2. The only large areas where trails are developed for non-motorized use are the Skeleton Fire and Horse Ridge areas, although some routes in the Badlands are managed for non-motorized use only. Many small parcels of public land are closed to motorized use; however, this alternative closes the least amount of land to motorized use (approximately 5 percent). The largest single area designated Closed to motorized use would be the Smith Rock parcel of BLM-administered land.

Alternative 2 would also provide the greatest opportunity for unrestricted year-round access to public lands, with approximately 92 percent of the area open year-round. Seasonal closures are generally limited only to the Northwest and Tumalo blocks of BLM-administered land. Motorized recreation opportunities would be spread throughout the planning area, with Millican Valley, the Bend/Redmond block, and Cline Buttes being managed for motorized use on designated trail systems. Management of the Bend/Redmond block would change from Open to a designated system. Management of the Cline Buttes block would change from Limited to "existing roads and trails" to a specific designated trail system (see DEIS Map 16, Recreation Emphasis-Alternative 2).

Geographic Areas

Badlands

Motorized travel would be restricted to a designated network of inventoried routes. The area would remain Open year round for both motorized and non-motorized public use.

Improvements would be made at entry areas, to allow for better defined parking areas, trailhead, and improvements of boundary fences to help minimize entry at undesignated locations and cross-country travel.

The Badlands area would be managed as Limited to designated roads (see DEIS Map S-2), and Route 8 (approximately 8 miles), Route 9, and parts of routes 4, 5, 6, and 7 (approximately 12 miles) would be designated Open to motor vehicles.

Bend/Redmond

While this area changes from an Open (Alternative 1) to a Limited designation, all recreation types would be expected to share the same trails (with the exception of a North Unit Canal regional trail and trails within the Wagon Roads ACEC). Select roads of historic and cultural value may be removed from the designated road system. Site improvement goals would include staging areas, an OHV play area, and grade-separated crossings of State Highway 126, Powell Butte Highway, and other new rights-of-way roads. The number of motorized access points into the area would be reduced.

Cline Buttes

The entire Cline Buttes block would be managed for multiple use, with motorized and non-motorized users sharing most of a designated road and trail system. Approximately 25 to 40 miles of multi-use trails are designated within Cline Buttes. Several smaller trail loops are provided for non-motorized use, including some of the designated trails along the Tumalo Canals, and any trails designated within 1.2 mile of the Deschutes River. The area has a designated system of access points, which are improved and have identifiable boundaries.

The entire block would be designated as Limited to designated roads and trails, except for a 1.2-mile buffer along the Deschutes River, which would be designated Closed to motorized vehicles.

Horse Ridge

Under this alternative, the management focus for the Skeleton Fire area and Horse Ridge would be on non-motorized trail use on designated trails. Designated roads would be present in these areas, but at a low density and layout similar to what is currently available. Some existing roads would be reopened in the Skeleton Fire area, to allow for loop drives and recreational use by hikers, runners, etc. Existing 2-track roads that are currently closed to motorized use may be included as part of a designated, signed, non-motorized trail system. Improvements would be made to parking and staging areas to serve hikers, equestrians, mountain bikers and other users.

Horse Ridge would be designated as Limited to designated roads only, with the exception of closed areas described under Common to Alternatives 2 - 7 (Small parcels adjacent to Conestoga Hills, Rickard Road, and the Horse Ridge ACEC/RNA).

Mayfield

This alternative would allow for more motorized use in the main block than is presently provided. The main block would be managed for motorized use on a larger designated road network than the current system. Designation of additional motorized trails in the area would be emphasized. The focus of a designated, motorized trail system would be on the center and northern portion of the main block, to minimize conflicts with adjacent landowners.

The main block between Powell Butte Highway and Alfalfa Market Road would be designated as Limited to designated roads and trails. The Airport Allotment area would

be designated Closed to motor vehicles and the area south of Alfalfa Market Road would be designated as Limited to designated roads.

Millican Plateau

The recreation management emphasis for the area would be OHV opportunities. The existing boundaries of the Millican Valley OHV area would be expanded and the designated, year-round trail system increased, particularly in the western and northern portions of the area. Improvements would be made to staging areas, and provisions made for safe, grade-separated crossings of Millican/West Butte and Reservoir Roads. While most of the area would be managed for OHV use on designated trails, both the Powell Butte RNA and the isolated parcel at the top of Powell Butte would remain Closed to motor vehicles. The current northern half of Millican Plateau area would be expanded.

North Millican

Alternative 2 manages the area for multiple use, with a small portion of the area located adjacent to the Badlands WSA emphasizing non-motorized trails. The alternative would improve trailheads and create a group use area at the base of Dry Canyon, which would replace the dispersed parking and camping occurring in the area presently. Many of the improvements established in the Millican Valley Plan would be implemented.

The existing boundaries of the Millican Valley OHV area would be expanded and the designated trail system would be increased, particularly in the eastern portion of the area. Long, straight, high-speed trail alignments would be replaced by more technical routes that offer more variety, and longer riding experiences. Trails would be realigned to take advantage of fewer safe crossings of Millican/West Butte Road, and frontage trails would be developed as needed to collect trail traffic and route it to designated crossings. The trail system would be improved to allow better stand-alone riding opportunities on both the west and east side of Millican/West Butte Road.

The entire area would be designated as Limited to designated road and trails.

Northwest

The area would be managed for both motorized and non-motorized recreation. Emphasis for motorized trail development would be on providing future connections to larger trail systems on Crooked River National Grasslands (CRNG), if needed. The area would be closed to motorized use seasonally to match adjacent policy on CRNG, but would remain open year-round for non-motorized use. The Sisters Climbing area would be managed with an emphasis on rock climbing use, and would be signed and identifiable as BLM-administered land.

Motorized travel in main block would be Limited to designated roads and trails and limited to April 1 thru November 30. Motorized travel in isolated parcels west of Squaw Creek would be Limited to designated roads and limited to April 1 thru November 30. This alternative would designate Cascade Mountain/Willamette Valley Wagon Roads (CM/WV) as a shared use BLM system designated trail that links to the access road for Alder Springs Trailhead. Development of one or more loop trails off the main CM/WV trail would be considered.

Prineville

Alternative 2 treats the area much like the current management, keeping most of the scattered tracts open to motorized use year-round, and not providing any recreation infrastructure or management. A few problem areas are treated with more specific detail, mainly to respond to erosion or road maintenance problems, or problem dumping areas. The entire area would be designated as Limited to designated roads and trails, except the

BLM parcel near the Juniper Canyon summit, which would be designated as Limited to designated roads from March 16 thru November 30.

Prineville Reservoir

Most of the area surrounding Prineville Reservoir would be managed for motorized use on designated roads and trails (Limited designation). The Powderhouse Cove/Taylor Butte east of State Highway 27 and south of the reservoir would be managed for motorized roads only. The recreation management emphasis for the Powderhouse Cove/Taylor Butte areas would be to develop non-motorized trails to offer an additional recreation opportunity for Prineville Reservoir State Park visitors.

In addition, all isolated parcels, including parcels east of the Bear Creek arm and scattered tracts at the eastern edge of the area, would be designated as Limited to designated roads.

Smith Rock

The entire block would be closed to motorized vehicles. Additional non-motorized trails may be created, both to solve resource issues, and to meet demand for hiking, mountain biking, and equestrian trail opportunities.

South Millican

Under this alternative, the management focus for the South Millican area would be on maintaining the area as an OHV area, with use allowed on designated roads and trails year-round. Existing trail connections to the North Millican area would be maintained. The South Millican and Fox Butte areas would be Limited to designated roads and trails.

Steamboat Rock

The main public land block within the Steamboat Rock area would be managed for dispersed use, with both motorized and non-motorized use sharing trails and roads. The number of access points would be reduced, and the remaining designated access points would be improved, hardened, and have defined boundaries. New roads or trails are created to link existing roads back to common access points or trailheads. The river parcels adjacent to Crooked River Ranch would continue to be managed to emphasize non-motorized use. Isolated parcels northwest of Redmond would be managed exclusively for non-motorized use, with access improvements to allow access to the middle Deschutes River while minimizing conflicts with landowners.

Main Steamboat Rock Block would be Limited to designated roads and trails. The Deschutes River corridor within Main Steamboat Rock block would be managed as a non-motorized use area (see DEIS Map 9, Travel Management Designations Alternative 2).

Tumalo

Motorized trails in main portion of the Tumalo Block (the area north of Tumalo Reservoir) would be considered for development. However, trail development would only be considered if connections to a larger trail system on the Deschutes National Forest or at Cline Buttes are available. The BLM-administered lands to the south of Tumalo Reservoir are closed to motor vehicles, and are managed for non-motorized trail use on designated trails only.

Motorized travel would be Limited to April 1 thru November 31. Motorized travel in main block would be Limited to designated roads and trails, and travel in the smaller block of BLM-administered land to the south of Tumalo Reservoir would be Limited to designated roads only.

Transportation and Utilities

Alternative 2 would emphasize using existing roads as the backbone of the transportation system to access BLM-administered lands. Known county roads, including historic roads, would be designated collector roads for the BLM-administered lands. A new corridor would be allocated for Highway 126 (Common to Alternatives 2 - 7).

Regional Transportation

Alternative 2 would designate a regional transportation corridor between south Redmond near the fairground and north Bend near Deschutes Jct. Alternative 2 would likely require relinquishment of about 17 miles of existing road right-of-way in the Bend-Redmond block at the time the right-of-way grant is issued.

Local Transportation

Alternative 2 would designate about the same configuration of collector roads as does Alternative 1. Management direction Common to Alternatives 2 - 7 indicate that up to 2,562 miles of local roads would be available for future designation or closure. Alternative 2 identifies 25 percent of the planning area in a primary wildlife emphasis designation and 20 percent in either a non-motorized emphasis or non-motorized exclusive designation. The recreation designations may or may not be included in the primary wildlife emphasis designation (see Recreation and Wildlife Emphasis maps for specific locations).

Right-of-Way Corridors

This alternative would allocate a transportation/utility corridor adjacent to the BNSF railroad right-of-way approximately 1.2 mile wide south of Redmond, extending to Deschutes Junction.

Land Ownership

Alternative 2 would emphasize maintenance and expansion of existing large blocks of public lands to provide for the greatest range of public land uses and wildlife connectivity, and improve the administrative efficiency of public land management. Lands available for disposal emphasize use of the BACA bill legislation to maintain funding within the state to acquire other federal lands. Community Expansion (CE) lands are provided for schools, parks, open space, low-income housing, and commercial and industrial space that match expected urban growth boundary accretions or address many identified community needs.

Alternative 2 would designate approximately 358,314 acres of BLM-administered lands as Z-1 (DEIS Map 31). The blocks of public lands identified as Z-1 include Tumalo, Cline Buttes, Bend/Redmond Core, Smith Rocks, Mayfield, Badlands, Horse Ridge, Reservoir West, Reservoir East, Southeast, and the majority of public lands in La Pine north and south of the community. Other, smaller parcels of public land identified include Grizzly Mountain, Ochoco Reservoir, and Juniper Canyon. Approximately 22,279 acres would be designated Z-2, and approximately 12,993 acres would be designated Z-3. In addition, for community use and needs, approximately 5,323 acres would be designated CE.

Public Health and Safety

Alternative 2 would include about 1 percent more closures of BLM-administered land to all firearm discharge than Alternative 1. This alternative would increase the acreage closed to firearm discharge unless legally hunting to approximately 5% of the planning area, by closing some areas in ACECs and urban parcels (see Table 2-18, below).

Table 2-18 Closed to Firearm Discharge Unless Legally Hunting; Alternative 2

Geographic Area	
Tumalo Canal ACEC	Entire ACEC
Tumalo	1,025-acre parcel south of Tumalo Reservoir Road, Tumalo Canal ACEC
Bend Redmond	BLM-administered land southwest of McGrath Road including Wagon Roads ACEC
Mayfield	Airport Allotment
Prineville Reservoir	BLM-administered land ½ mile east of the Lower Crooked WSR plus lands contiguous with, east of, and north of the WSR boundary
Horse Ridge	North of Rickard Road, South of HWY 20

Alternative 3

Alternative 3 would provide for ecosystem health and diversity by focusing efforts on restoring historic conditions as described under the Key Concepts, and would anticipate higher amounts of treatment acres, especially prescribed fire acres, than alternatives with the current range emphasis. Alternative 3 would increase the amount of primary and secondary wildlife habitat emphasis in the planning area over current direction to about 77 percent of the planning area.¹⁹ There would be no additional management direction over that Common to Alternatives 2 - 7 for riparian areas or water quality or quantity, but Alternative 3 would include a substantial change in the amount of Special Management Areas designated within the planning area. This alternative would include designation of two new Old Growth Juniper Woodlands ACECs in the Cline Buttes and Mayfield geographic areas to focus research, interpretation, and management of the unique Central Oregon old growth juniper ecosystems. The Juniper Woodlands ACEC would incorporate the Peck's Milkvetch (CTA) and Tumalo Canals (CT 2-7) ACECs. This alternative would also include designation of a scenic ACEC for the Smith Rock area. Alternative 3 would include the greatest amount of Special Management Area designations of all of the alternatives.

There would be only a very slight change in areas available for livestock grazing under Alternative 3 over those identified under Alternative 1. There would be slightly fewer acres available for mineral sales over those identified as Common to Alternatives 2 - 7 as a result of an extended buffer area around residential and recreational areas. New ACEC designations indicate a greater potential for increased cost or limited availability of mineral materials within those areas, but do not include prohibitions on use. Estimated forest or range products are based on the expected amount of treatment acres (in addition to the Wildland-urban interface (WUI) treatments identified as Common to Alternatives 2 - 7), and are expected to be at about 150,000 cubic feet (750,000 board feet) for Alternatives 3, 6, and 7, higher than Alternatives 2, 4, or 5. Alternative 3 would provide about 8000 less acres for long-term military training use.

The recreation emphasis in Alternative 3 would be much more on providing segregated rather than shared facilities compared to Alternatives 1 or 2. Areas managed exclusively for or with a non-motorized emphasis for trails would be increased over Alternative 1 by about 33 percent, with slightly more emphasis on exclusive non-motorized than non-motorized emphasis areas (which provide motorized use on roads, non-motorized on trails). About half of the geographic areas would emphasize recreation on designated motorized roads or roads and trails, with about 41 percent (5% snow-depth dependent) of the area available for motorized use on designated roads and trails during the winter use season.

Alternative 3 has about the same land designated for retention (Z-1), than Alternative 2, and about 2 percent more lands available for retention with the possibility of exchange (Z-2) than Alternative 2, but substantially less than Alternative 1. The total amount of land classified for disposal (Z-3) is slightly lower than Alternatives 1 and 2, at about 2% of the planning area. Lands classified as Community Expansion (CE) lands are reduced from both Alternatives 1 and 2, and include limitations on uses for future CE lands to greenbelts and open space.

Designated transportation systems are altered over those in Alternative 1 and 2 by the addition of a transportation corridor south of Redmond to Highway 97 near Quarry Road, and the designation of roads to serve as future collectors in the BLM system. By changing the designation of some existing collector roads to local roads, additional roads

¹⁹For this comparison, areas designated as critical habitat in the Brothers - La Pine Resource Management Plan or as a result of other cooperative designations like winter closure areas were assumed to reflect a "primary" designation as used by the Upper Deschutes RMP.

fall into a category that would make them available either for future designation or closure, depending upon management objectives. Alternative 3 would anticipate future local road densities to be lower or seasonally restricted in areas of high wildlife emphasis, or areas designated for non-motorized emphasis. In accordance with elements common to Alternatives 2 - 7, designation of a new transportation corridor would anticipate future relinquishment of a similar amount of historic roads in the Bend-Redmond geographic area.

Of any alternative, Alternative 3 would close the most acreage to some type of firearm discharge (32% of the planning area); however, most BLM-administered land in the planning area would still be available for hunting (98%). Areas of emphasis would include the Badlands area, Steamboat Rock, and the Tumalo block to improve recreation experiences, and protect sensitive resources.

This alternative also assumes inclusion of all elements listed in the Continued Management Direction and Common to Alternatives 2-7 sections.

Ecosystem Health and Diversity

Alternative 3 would emphasize restoring native plant and animal populations to their "historic" distribution on BLM-administered lands. This would include a strong emphasis on restoring grass and shrub communities where western juniper has expanded its historic range or density throughout the planning area. It would also emphasize management for more diverse native animal populations, with less of an emphasis on providing suitable cover habitats for deer and elk outside of the historic range of plant communities that may provide those attributes. Outside of the WUI, restoration of natural fire regimes would be emphasized to the extent that such natural fire regimes function at a scale and intensity that does not have a detrimental long-term effect on the function of wildlife habitats or human populations within the planning area. Old-growth juniper would be highlighted through a series of ACECs.

Historic range of variability would be used as a guide to design and implement landscape-scale treatments to produce sustainable and resilient plant communities capable of withstanding periodic outbreaks of insects, disease and fire. Western juniper would co-exist in some shrub-steppe communities, but would maintain a subordinate role and contribute to bio-diversity at the landscape level. An estimated 70-80 percent of sites with young (less than 150 years old) juniper would be converted back into shrub-steppe or savanna communities within the next 15 years, depending on budget limitations.

In old and mature ponderosa and lodgepole forests, stand density would consist of fewer trees with a larger average diameter. There would be a lower proportion of smaller and intermediate sized ponderosa and lodgepole pine. Over time, treatments would produce a more open stand with a one or two layer canopy structure and healthy and more diverse shrub, grass, and forb understories.

Priority treatment areas in lodgepole and ponderosa pine forest would incorporate many of the priorities indicated within Alternative 2 but would treat larger units and provide management direction to expand current range toward historic range. Alternative 3 would put a greater emphasis on managing special status species' habitats, and less emphasis on managing for other species' habitat.

Alternative 3 would create the largest old-growth juniper woodland ACECs (see SMA section).

Alternative 3 uses special management areas and non-motorized recreation emphasis areas to focus primary management for deer, elk, sage grouse, and pronghorn. Alternative 3 would emphasize providing terrestrial source habitats for multiple species needs across their *historic distribution*, and would increase focus on important winter range conditions for deer, elk, and sage grouse.

Alternative 3 would emphasize protecting and enhancing special status plants, old growth juniper ecosystems, historic features, and unique recreational values by designating a group of representative ACECs across the planning area.

Three new ACECs would be designated: Alfalfa Market Road, Juniper Woodland and Smith Rock.

Vegetation

Shrub-Steppe Communities

Alternative 3 would emphasize maintaining and restoring large contiguous stands of healthy, productive and diverse native shrub/steppe plant communities throughout their historic range. Restoration and expansion of key plant communities would approximate historic stand structure and geographic range as defined by conditions existing at pre-European settlement times. On most historic shrub-steppe sites, western juniper would be reduced to widely spaced old-growth trees or small patches on ridgetops or other appropriate locations where trees would contribute to biodiversity at the landscape level.

Old-Growth Juniper Woodlands

Alternative 3 would protect and promote the health and integrity of old-growth juniper woodlands/savanna throughout its historic range. In addition to the protection and maintenance of existing old-growth, treatments would also be designed to restore old-growth in selected areas where it has previously existed. Alternative 3 would designate two ACECs to protect and highlight old-growth juniper woodlands: the Juniper Woodlands ACEC (31,000 acres) and the Alfalfa Market Road ACEC (4,200 acres).

Lodgepole and Ponderosa Pine Forest

This alternative would maintain and promote healthy and diverse lodgepole and ponderosa pine forest ecosystems. Stand structure, density, species composition, patch size, pattern, and distribution would be managed to provide an environment in which fire intensity can be managed for human safety and fire effects are compatible with other management objectives. In addition, Alternative 3 would maintain or mimic natural disturbance regimes so that stands are resilient to periodic outbreaks of insects, disease, and wildland fire. Ponderosa pine would be managed to maintain its dominance throughout its range by reducing competing lodgepole pine and juniper. Mature and old ponderosa pine forest structure would be re-developed in most areas within its historic range in the planning area through a series of selective thinnings, commercial harvests, and underburning.

In general, Alternative 3 would treat acres annually with prescribed and mechanical methods over the next 15 years (see also Comparison of Alternatives, Table 2-1). Prescribed fire would be expected to treat approximately 3,838 acres in years 1 – 5, and approximately 9,210 acres in years 6 – 15 (111,290 acres total). Mechanical methods would be used to treat approximately 11,512 acres in years 1 – 5, and approximately 6,140 acres in years 6 – 15 (118,960 acres total).

Riparian

Alternative 3 would emphasize restoring riparian habitats to support populations of well-distributed native and desired nonnative plant, vertebrate, and invertebrate populations similar to historic conditions. Vegetative treatments would occur on

approximately 30 miles of perennial streams and 730 miles of intermittent and ephemeral streams and include areas identified as High Priority for Restoration in the Upper and Lower Crooked River sub-basins, Aquatic Strongholds, and the expanded sage grouse restoration area. Reduction of juniper within riparian areas would benefit riparian plant communities by reducing competition with juniper.

Wildlife

Planning Area

Alternative 3 (like Alternatives 6 and 7) would emphasize restoring terrestrial source habitats to provide for species needs across their historic distribution with a focus on biological diversity, by increasing the geographic extent of vegetation cover types and structural stages that have declined substantially from the historical to the current period. This alternative would provide direction to re-pattern the vegetation patches so they become consistent with natural disturbance regimes and with the landform, climate, and biological and physical characteristics of the ecosystem.

Representative components of naturally occurring vegetative types would be established across the planning area within the historic range of plant communities in sufficient size and frequency to serve as source habitats for species groups that are dependent upon those habitats. General wildlife emphasis by geographic area is displayed in Table 2-3, Wildlife Emphasis Areas, All Species Habitat.

Geographic Areas

Alternative 3 would establish specific direction for the following geographic areas (see Common to Alternatives 2-7 for a description of primary, secondary and general wildlife emphases). Wildlife habitat emphases by geographic areas specific to species of local importance can be found in Tables 2-4 – 2-8. This alternative would manage approximately 63 percent of the planning area with a primary emphasis, 14 percent with a secondary emphasis, and 23 percent with a general emphasis for wildlife (see Table 2-1, Comparison of Alternatives).

Hydrology

Watershed/Hydrologic Function

Alternative 3 vegetative treatment acres within the planning area would be approximately 180,000 acres focusing on the restoration of plant communities to their “historic” distribution, and would include areas identified as high priority for restoration within both the Upper and Lower Crooked sub-basins, Aquatic Strongholds, and the expanded sage grouse restoration area.

Special Management Areas

Areas of Critical Environmental Concern (ACECs)

Three new ACECs would be designated: Alfalfa Market Road, Juniper Woodland, and Smith Rock (see DEIS Map 7). The acres designated as ACEC (existing and new) total 60,192 under Alternative 3.

Badlands ACEC

In addition to management direction for the larger WSA applied to all alternatives, under Alternative 3, the following guidelines apply:

1. The ACEC is closed to motorized use year-round;
2. The ACEC is closed to firearm discharge unless legally hunting (see also Recreation, Badlands – Continued Management Direction, and Recreation, Badlands – Alternative 3).

Alfalfa Market Road ACEC (4,200 acres)

Alternative 3 would protect and/or promote the health and integrity of the old growth juniper woodland ecosystem, its associated wildlife and habitat, and recreational values on approximately 4,200 acres.

Fire Management: Consistent with the District Fire Management Plan, fire suppression activities and prescribed fire would be designed to maintain or enhance the special values of this ACEC.

Vegetation Treatments: Treatments designed to maintain or enhance the values of this ACEC would be allowed. Restoration/improvement of native plant communities, old-growth juniper woodlands, and habitat for raptors, neotropical birds and threatened, endangered or other special status plants and animals would be emphasized. Long-term vegetation maintenance would be designed to emulate natural processes and return historic diversities.

Special Forest and Range Products: Generally, harvesting of wood products and special forest and range products would not be allowed except in conjunction with restoration treatments or if it is consistent with the values of the ACEC. Firewood cutting would not be allowed.

Livestock Grazing: Livestock grazing would be allowed if it was consistent with ACEC goals and in accordance with Standards for Rangeland Health and Guidelines for Grazing Management.

Minerals: Mineral material sales, development of mining claims, and geophysical exploration would be restricted to protect the values of this ACEC. Plans of operation would be submitted to and approved by the BLM prior to any issuance of free use permits, sales contracts or prior to the development of mining claims. Approved plans of operation would have stipulations to protect the values of the ACEC. Surface occupancy for fluid mineral leasing would not be allowed. Rockhounding and the collection of decorative stone would not be allowed.

Firearm discharge: Closed to firearm discharge unless legally hunting.

Rights of Way: After the permanent BLM road network would be established and implemented, new roads would only be considered if they replace a similar mileage of existing road. Decommissioned roads would be obliterated and rehabilitated unless a compatible use is identified such as converting a road to a trail or preserving a historic route.

Juniper Woodland ACEC (31,000 acres)

Alternative 3 would provide direction to protect and/or promote the health and integrity of the old growth juniper woodland ecosystem and its associated wildlife, special status plant (Peck's Milkvetch), historical (Tumalo Canals) and recreational values on 31,000 acres in the Cline Buttes area.

Fire Management: Consistent with the District Fire Management Plan, fire suppression activities and prescribed fire would be designed to maintain or enhance the special values of this ACEC.

Vegetation Treatments: Vegetation and wildlife habitat management projects would be an integral part of ACEC management and would be designed to maintain or enhance the ACEC values by restoring/improving native plant communities, old-growth juniper woodlands, and habitat for raptors, neo-tropical birds and threatened, endangered or other special status plants and animals. Long-term vegetation maintenance would be designed to emulate natural processes.

Livestock Grazing: Livestock grazing would generally be allowed if consistent with ACEC goals and in accordance with Standards for Rangeland Health and Guidelines for Grazing Management.

Minerals: Mineral material sales, development of mining claims, and geophysical exploration would be restricted to protect the values of this ACEC. Plans of operation would be submitted and approved by the BLM prior to any issuance of free use permits or sales contracts or prior to the development of mining claims (see Common to

Alternatives 2 – 7 for minerals information in the Tumalo Canals area).

Recreation: Non-motorized recreation would be emphasized in the area west of the Cline Falls Highway and east of Barr Road. Interpretive trails would be developed. Small developments, such as picnic areas at trailheads and/or interpretive areas, would be developed as needed.

Firearm discharge: The portion of the ACEC that includes the Maston Allotment and that is east of the Cline Falls Highway would be closed to firearm discharge unless hunting.

Rights of Way: After the permanent BLM road network is established and implemented, new roads would only be considered if they replace a similar mileage of existing road. This area would be an avoidance area for new rights-of-way. Decommissioned roads would be obliterated and rehabilitated unless a compatible use is identified such as converting a road to a trail or preserving a historic route.

Land Ownership: The ACEC would be within Land Tenure Zone 2, which would allow adjustments, provided there is no net loss of acreage within the ACEC and the management goals could still be attained. Acquired lands within the ACEC would be added to the ACEC designation.

Smith Rock ACEC (2,120 acres)

Alternative 3 would designate a 2,120-acre area adjacent to Smith Rock State Park to provide high scenic quality and dispersed recreation.

Vegetation Treatments: Vegetation and wildlife habitat management projects would be designed to maintain or enhance the ACEC values. Long-term vegetation maintenance would be designed to emulate natural processes.

Livestock Grazing: Livestock grazing would generally be allowed if consistent with ACEC goals and in accordance with Standards for Rangeland Health and Guidelines for Grazing Management.

Minerals: Mineral material sales and surface occupancy for fluid mineral leasing would not be allowed. Plans of operation would be submitted to and approved by the BLM prior to any development of mining claims. Approved plans of operation would have stipulations to protect the values of this ACEC. Geophysical exploration would also be restricted to protect the natural values for which this ACEC was designated. New rights-of-way would not be considered. Rockhounding would be restricted to surface collection only. No person would be allowed to dig, excavate or otherwise remove soil to explore for, discover, or remove rock materials. Decorative stone collection would not be allowed.

Recreation: The ACEC would be closed to motorize use.

Firearm discharge: Firearm discharge would not be allowed unless hunting.

Land Ownership: Recreation and Public Purposes Act (R&PP) leases would not be issued for lands within the ACEC unless such leases would be non-patent and would not impair values for which this ACEC was designated.

Caves

In Alternative 3, all significant caves and caves nominated for significance (with the exception of Redmond Caves) would be closed under the “Federal Cave Resources Protection Act” until a site management plan is developed that manages wildlife resources with a primary emphasis. Pictograph Cave would be closed except for interpretive use under permit.

Land Uses

Livestock Grazing

In this alternative (as in Alternatives 2 - 7), the BLM would use a formula to estimate potential for conflict and demand to help identify where problems are likely to occur.

This alternative does not include any management changes to reduce conflicts, other than those already listed in Continued Management Direction and CT2-7. Livestock grazing would continue to be allowed regardless of level of conflict or demand.

Minerals

Minerals would be managed with an emphasis on mitigating mining conflicts with ecosystem and wildlife habitat management objectives in important wildlife habitats. Mining conflicts with recreation and residents would be mitigated as in Alternative 2.

Under this alternative, approximately 347,080 acres would be available for mineral material sales. Seasonal restrictions on all mineral operations would apply to 88,994 acres and surface occupancy for fluid mineral leasing would not be allowed on 75,481 acres. Mineral material sites would not be developed within 1/8 mile of residentially zoned areas or designated recreation sites. Roads under BLM jurisdiction that feed into residentially zoned areas could be used for mining-related traffic only if alternate routes are not available (see DEIS Map S-24, Minerals Alternative 3).

The Prineville Reservoir Cinder Pit would be inaccessible most of the year due to road closures in the area. The access road to the pit would be opened to the public and commercial operators a few times each year (for a week or weekend at a time) during the spring and summer. Only those persons with valid sales contracts for the site would be allowed to use motorized vehicles to access pit, and they would only have authorization to drive on the main access road. Government agencies with free use permits would be granted administrative access to the site.

Forest Products

Harvest of commercial timber and firewood would occur in conjunction with larger-scale vegetative treatments that incorporate thinning dense timber stands and removing small diameter trees.

More intensive thinning of small diameter lodgepole pine in Alternative 3 would provide a slightly higher yield of forest products than under Alternative 2. Actual rate of thinning in overstocked lodgepole and ponderosa pine stands would be constrained by budget limitations. Priority treatments that could produce commercial forest products would be based on restoration of historic structure and range of ponderosa pine and vegetative treatment objectives for fuels, forest health and wildlife habitat. Thinning from below and removal of competing lodgepole pine and juniper would be emphasized (see Table 2-1, Comparison of Alternatives, for forest product volumes produced under each alternative).

Military Uses

Alternative 3 would provide for a historically consistent level of military training area in the smallest possible area, overlapping training within the same area.

The area permitted for military use would be approximately 21,094 acres. The training area permitted in this alternative would be south of Highway 126, crossing Powell Buttes Highway. The permitted area would be east of the Roberts Field and North Unit Canal and north of BLM road 6589-B. The permitted area would be west of the private land ownership in the rural community of Powell Buttes. The old clay pit north of Highway 126 would also be included. The area described is the same as the No Action Alternative minus all lands west of the North Unit Canal up to the lands adjacent to the east boundary of the airport.

Recreation

The recreation emphasis varies by area in Alternative 3. The largest percentage (39 percent) of the planning area is still managed for multiple use on shared road and trail facilities (the Bend/Redmond block and Millican Valley). About 20 percent of the area is managed exclusively for non-motorized recreation use (a portion of Cline Buttes, Badlands WSA, Alfalfa ACEC, Tumalo block, and the lower Crooked River), while about 16 percent of the area is managed with an emphasis on motorized use only on roads, with trails provided for non-motorized use (Mayfield, Horse Ridge, and Skeleton Fire areas). The largest blocks of land closed to motor vehicles and managed for non-motorized trail use include the Badlands WSA and an area on both sides of the Chimney Rock segment of the lower Crooked River. Cline Buttes and Steamboat Rock blocks would have intensive management for multiple use on separated road or trail systems. About 18 percent of the area is Closed to motorized use year-round; only Alternative 6 closed more acreage than this. About 22 percent of the area has seasonal restrictions on motorized use, which is about in the middle of the range of alternatives; however, this alternative does close an additional portion of Millican Valley under heavier snow conditions. During seasonal closure periods in the Millican Valley, motorized use would be managed on designated trails in the Millican Plateau, as well as in the Bend/Redmond block and on separate trail systems in a portion of Cline Buttes (see DEIS Map 17, Recreation Emphasis – Alternative 3).

Geographic Areas

Badlands

Alternative 3 would move the area's management more toward a primitive, non-motorized recreation experience, with the entire area designated Closed to motor vehicles, except for administrative use. Mechanized use (e.g., mountain bikes, horse drawn carts) would be allowed on designated, inventoried routes. Designated parking and trailhead improvements would be a high priority under this alternative, in order to provide adequate parking for vehicles and trailers that currently park in dispersed locations within the WSA.

The Badlands WSA would be closed to all motorized vehicle use, except administrative use (including patrols and Interim Management Plan monitoring).

Bend/Redmond

Alternative 3 provides a similar level of management as Alternative 2; however, this Alternative identifies the area north of State Highway 126 as having a lower trail density than in Alternative 2. This alternative also places more emphasis than Alternative 2 on moving trails away from existing subdivisions to the extent feasible. While the area's management changes from an Open to a Limited designation, all recreation users are expected to share the same trails (with the exception of a possible North Unit Canal regional trail and trails within the fenced portion of the Wagon Roads ACEC. Select roads of historic and cultural value may be removed from the designated road system. Site improvement goals would include staging areas, an OHV play area, additional trail bridge crossings of the north unit canal, and grade separated crossings of State Highway 126, Powell Butte Highway, and other new arterials or highways rights-of-way roads.

Cline Buttes

Recreational users in Cline Buttes would be segregated under Alternative 3 to minimize conflicts to a significant degree. Motorized use would be managed with an emphasis on designated roads. The Maston Allotment would be managed for primitive, non-motorized recreation experiences, and many areas in Cline Buttes emphasize designation

of non-motorized trails, including the upper portions of the Buttes, the historic canals, and the dry canyon areas.

The main block south of State Highway 126 and generally west of Barr Road would be designated as Limited to designated roads and trails. Except: The dry canyon complex east of Fryrear Road and south of State Highway 126 would be closed to motorized travel.

The area north of State Highway 126 would be designated as Limited to designated roads and trails.

The area east of Cline Falls Highway (Maston Allotment) and the area east of Barr Road, west of Cline Falls Highway, and south of the access road to the Cline Buttes gravel pit (Cline Buttes Old Growth Juniper ACEC) would be designated as Closed to motor vehicles.

Horse Ridge

Under this alternative, the management focus for the Skeleton Fire area and Horse Ridge would be on non-motorized trail use on designated trails. Designated roads would be present in these areas, but at a low density and layout similar to what is currently available. Existing two-track roads that are currently closed to motorized use would be considered for inclusion as part of a designated, signed, non-motorized trail system.

La Pine

Under Alternative 3, motorized use would be Limited to a designated road system. Some designated OHV trail connections could be developed from the Rosland OHV play area east to the Deschutes National Forest.

The La Pine block would be managed as Limited to designated roads only, except (see DEIS Map 10) the area surrounding and east of the Rosland OHV Play area would be Limited to designated roads and trails. In addition, isolated public land blocks within the La Pine area would be managed as Closed to motor vehicles. These blocks generally range from 40 to 500 acres in size.

Mayfield

Motorized vehicle use in the main block of public lands north of Alfalfa Market Road and south of Powell Butte Highway would be Limited to designated roads only, with most of the road use occurring in the northern half of the block. Future motorized access points would likely be provided at Alfalfa Market Road and Powell Butte Highway. A signed trail system would be established in the block for equestrian/ non-motorized use. The road to Mayfield Pond would be rerouted further away from the pond or would end at a parking area prior to the pond. The area south of Alfalfa Market Road (Alfalfa ACEC) would be to motor vehicle use year-round, and would be managed for recreation use on a designated trail system, which includes closed roads, roads converted to trails, and new trail construction.

The main block between Alfalfa Market Road and Powell Butte Highway would be designated as Limited to designated roads only. The Alfalfa ACEC and the area outside of the Alfalfa ACEC boundary and west of Dodds Road would be designated as Closed to motor vehicles. The area east of Dodds Road would be Limited to designated roads only in order to allow continued access to Reynolds Pond.

Millican Plateau

The area would be managed for OHV use on designated roads and trails, similar to the present management (Alternative 1). The area north of Kitchen Hill and south of

Reservoir Road would be managed for year round use on designated roads and trails, except under conditions of heavy snowfall, as specified in the Final Judgment for the Millican Valley Plan. This area would be Closed to OHV use during the period between December 1 and April 30 when snow depths exceed specified depths as described in the Motorized Closure Guide.

Snow depth would be measured at the current designated measurement locations and averaged. If the applicable snow depth is exceeded, the area shall be posted closed at kiosks with 48 hours and remain closed until the snow depth falls below the applicable amount.

Motorized Closure Guide:

TIME PERIOD	SNOW DEPTH (INCHES)
Dec. 1 – Dec. 14	6.8
Dec. 15 - Dec. 31	9.1
Jan. 1 – Jan. 14	11.0
Jan. 15 – Jan. 3	12.7
Feb. 1 – Feb. 14	14.4
Feb. 15 – Feb. 29	11.9
Mar. 1 – Mar. 14	9.3
Mar. 15 – Mar. 31	7.0
April 1 – April 14	4.2
April 15 – April 30	2.2

The area east of Road 6555-b and west of the Crooked River would be designated Closed to motor vehicles. Off highway motorized vehicle use would be managed to provide visitor satisfaction, protect natural resources, provide visitor safety, and minimize conflicts among various users and neighbors.

North Millican Area

Alternative 3 manages the area for shared use, with a small portion of the area located adjacent to the Badlands WSA emphasizing non-motorized trails. The entire area would be open to motorized use from May 1 thru November 30. The alternative would establish improved trailheads, and a group use area at the base of Dry Canyon, which would replace the dispersed parking and camping presently occurring in the area. Many of the improvements established in the Millican Valley Plan would be implemented. This area would be limited to designated roads and trails and motorized travel would be limited to May 1 thru November 30.

Northwest

The area would be managed with an emphasis on non-motorized recreation, with motorized use being limited to designated roads only in the main block, while the scattered parcels west of Squaw Creek are Closed to motorized use. A seasonal restriction on motorized use would be in place, consistent with adjacent policy on the Crooked River National Grasslands (CRNG); however, the area remains open year-round for non-motorized use. Non-motorized trails and additional trailheads to serve them are provided.

Motorized travel in main block limited to designated roads and Limited to April 1 through November 30. Isolated parcels west of Squaw Creek would be Closed to motorized travel, except for Sisters Climbing Area.

Prineville Reservoir

The area would be managed primarily for motorized use on a Limited designated road system, with non-motorized trails developed adjacent to the Crooked River

and Prineville Reservoir. The area between the County Boat Ramp and the Chimney Rock Trail on the Crooked River would be managed for non-motorized use only. The northeastern portion of the area (the Sanford Creek drainage) would be managed for little motorized access, with designated roads only open seasonally. The remainder of the area including lands on either side of the Bear Creek arm of Prineville Reservoir would be limited to designated roads only year-round. These BLM-administered lands would have designated, non-motorized trails that link to BOR/State Park managed sites at Prineville Reservoir.

This alternative would remain the same as Alternative 2, except the area north of upper Portion of Prineville Reservoir is designated Limited to designated roads and motorized travel would be limited to May 1 thru November 30. The area between the County Boat Ramp and Chimney Rock Trail would be Closed to motor vehicles. In addition, motorized travel would be Limited to designated roads (Taylor Butte travel is limited under Common to Alternatives 2 - 7), except within the Sanford Creek area, where motorized travel would be Limited to designated roads and OHV use would be limited to May 1 thru November 30.

Smith Rock

Alternative 3, like all alternatives, closes the entire block to motorized vehicles. This alternative does not allow for additional trail development for non-motorized trail use, other than trail rerouting to solve resource or user safety problems at climbing areas. The designated trail link from Smith Rock State Park to the Grey Butte Trail would be maintained.

South Millican Area

The South Millican Area remains open to motorized use on designated roads and trails but would be closed seasonally to OHV use from December 1 to July 31. Connections to North Millican and National Forest trails systems could be developed in the future. South Millican OHV area and Fox Butte Area are Limited to designated roads and trails, and motorized use would be limited to August 1 thru November 30.

Steamboat Rock

The main Steamboat Rock area would be Limited to designated roads and to Class I and III OHVs only (no full size vehicles) in an effort to reduce conflicts between residential areas and public land visitors and to reduce illegal dumping prevalent in the area. The number of access points would be reduced, and new roads would be created to link existing roads back to common access points or trailheads. A separate trail system for non-motorized use would be developed. Signs and public information would be put in place to maximize user compliance on trail system regulations. The river parcels adjacent to Crooked River Ranch would continue to be managed to emphasize non-motorized use. Isolated parcels northwest of Redmond are managed exclusively for non-motorized use, with improvements to allow access to the middle Deschutes River while minimizing conflicts with landowners.

The main block would be managed as Limited to designated roads only, and limited to Class I and III OHVs only (no full size vehicles).

Tumalo

The Tumalo Block would be Closed to motorized use year-round, and the recreation management emphasis would be on providing non-motorized opportunities (hiking, mountain biking, and equestrian use) on designated trails year-round. Designated, improved, and managed parking areas and trailheads would be developed. A designated, non-motorized trail system would be developed and signed in both larger parcels north and south of Tumalo Reservoir. In order to control motor vehicle access into the

parcels, the boundaries are fenced. Unlike other alternatives that stress non-motorized trail development, this alternative explicitly calls for no development of regional trails through the area.

The entire area would be Closed to motorized use.

Transportation and Utilities

The emphasis for Alternatives 3-7 is to designate an integrated regional and local transportation system that would minimize the total amount of land committed to transportation systems and improve the efficiency of the resulting system to meet multiple-agency needs. Alternatives 3-7 would allocate a reduced area for a regional transportation corridor, connecting with an interchange at Quarry Road on Highway 97 rather than extending south to Deschutes Junction. Alternatives 3-7 do not vary in the amount and location of collector or local roads available for future designation or closure

Regional Transportation

Alternative 3 would designate a transportation corridor between south Redmond to connect with an interchange at or around Quarry Road. There would be no additional transportation corridor allocated between Bend and Redmond. Alternative 3 would likely require relinquishment of about 10 miles of existing historical road in the Bend-Redmond block at the time the right-of-way grant is issued.

Local Transportation

Alternatives 3-7 would all designate a similar local transportation system. Roads not under BLM jurisdiction would continue to form the backbone of the collector system, except where we can reasonably anticipate modification of existing rights-of-way. Alternative 3 identifies about 63 percent of the planning area in a primary wildlife emphasis designation and 36 percent in either a non-motorized emphasis or non-motorized exclusive designation. The recreation designations may or may not be included in the primary wildlife emphasis designation (see the Recreation and Wildlife Emphasis maps for specific locations).

Right-of-Way Corridors

Alternatives 3-7 would designate the road network and transportation/utility corridors as shown on DEIS Map 3, and allocate a transportation/utility corridor adjacent to the Burlington Northern/Santa Fe railroad right-of-way approximately 1.2 mile wide south of Redmond, extending to Quarry Road.

Land Ownership

Alternative 3 would strongly emphasize retention of public lands in the current arrangement, with some allowance for sale or exchange to enhance wildlife habitat and connectivity, or development of open spaces and greenways that enhance urban or transitional recreational opportunities. Community Expansion (zoned CE) would be limited to parks, greenways, open spaces, or the creation of buffers between source habitats for wildlife and urban population centers. This alternative would maintain or create large consolidated blocks, primarily to protect and improve the best ecological areas and provide connectivity for the passage of wildlife.

This alternative would designate as Z-1 approximately 358,841 acres. Blocks of public lands identified as Z-1 include Tumalo, Cline Buttes, Bend/ Redmond Core, Smith Rocks, Mayfield, Badlands, Horse Ridge, Reservoir East, Reservoir West, Southeast, Highway, and the majority of public lands in La Pine north and south of the community. Other, smaller parcels of public land identified include Grizzly Mountain, Ochoco Reservoir, and Redmond Caves.

Under this alternative, parcels totaling approximately 33,556 acres would be identified that are generally to retain, but may be disposed of through exchange for lands with higher public values (Zone 2).

Approximately 7,889 acres would be designated to as suitable for disposal (Zone Z-3). These lands generally do not provide substantial resource, public, or tribal benefits; may not be cost effective for the BLM to manage; or would represent a greater public benefit in other ownership. Parcels identified as suitable for disposal (Z-3) include isolated parcels between Bend and Redmond, two isolated parcels northwest of Redmond, and isolated parcels around Prineville.

Approximately 3,121 acres would be designated for community expansion to provide transition zones between highly developed urban areas and large blocks of primarily undeveloped natural landscapes. Public lands identified for community expansion (zoned CE) for parks and transportation corridors with compatible facilities are located south of Redmond and east of Highway 97 and adjacent to the Burlington Northern and Santa Fe railroad tracks. Parcels identified for community expansion (zoned CE) for park purposes only are Barnes Butte northeast of Prineville; and public lands adjacent to the north, east, and south boundaries of the community of La Pine.

Alternative 3 emphasize the lands for acquisition that would protect and improve the best ecological areas and provide for the passage of wildlife; to provide access to public lands; and to increase the spectrum of recreation opportunities. Parcels of interest include those between Northwest and Cline Buttes, Smith Rock and Bend / Redmond, Tumalo and Cline Buttes, Bend / Redmond and Cline Buttes, and Mayfield and the Badlands.

Public Health and Safety

Of any alternative, Alternative 3 would close the most acreage to some type of firearm discharge (32% of the planning area); however, most BLM-administered land in the planning area would still be available for hunting (98%). Areas of emphasis would include the Badlands area, Steamboat Rock, and the Tumalo block to improve recreation experiences, and protect sensitive resources (see Tables 2-19 and 2-20 for areas closed to all firearm discharge and areas closed to firearm discharge unless legally hunting).

Table 2-19 Closed to All Firearm Discharge; Alternative 3

Geographic Area	
Cline Buttes	Tumalo Canal ACEC
Tumalo	1025-acre parcel south of Tumalo Reservoir Road
Bend Redmond	BLM-administered land southwest of McGrath Road including Wagon Roads ACEC
Mayfield	Airport allotment
Horse Ridge	North of Rickard Road, South of Hwy. 20

Table 2-20 Closed to Firearm Discharge Unless Legally Hunting; Alternative 3

Geographic Area	
Cline Buttes	Maston Allotment
Tumalo	Entire block except for the 1025-acre parcel south of Tumalo Reservoir Road
Steamboat Rock	All BLM-administered land south of Lower Bridge Road outside of the WSR corridor
Mayfield	Alfalfa ACEC and adjacent lands to the southeast
Horse Ridge	BLM-administered land between new and old Hwy. 20
Northwest	All BLM-administered land not closed to all firearm discharge CT Alts 2--7
Badlands	Entire Badlands Block except ½ mile around Badlands Rock from March 1 to August 31
Prineville Reservoir	BLM-administered lands contiguous and east of Lower Crooked WSR and contiguous and west of BOR/ Prineville Reservoir
Millican Plateau	BLM-administered lands contiguous and west of the Lower Crooked WSR, and east of Road 6665
La Pine	Entire block except for parcels closed to all firearm discharge CT Alts 2-7

Alternative 4

Alternative 4 would provide for ecosystem health and diversity by focusing efforts on maintenance of current conditions as described under the Key Concepts, and would anticipate lower amounts of treatment acres, especially prescribed fire acres, than alternatives with an historic emphasis. Alternatives 2, 4, and 5 would have this same emphasis. Alternative 4 would increase the amount of primary and secondary wildlife habitat emphasis in the planning area from current direction to about 50 percent of the planning area.²⁰ There would be no additional management direction over that Common to Alternatives 2 - 7 for riparian areas or water quality or quantity, but Alternative 4 would include a change in Special Management Areas. This alternative would include designation of two new Old Growth Juniper Woodlands ACECs in the Cline Buttes and Mayfield geographic areas to focus research, interpretation, and management of the unique Central Oregon old growth juniper ecosystems. The Juniper Woodlands ACEC would incorporate the Peck's Milkvetch (CTA) and Tumalo Canals (CT 2-7) ACECs, but would be about 800 acres smaller than the proposed ACEC under Alternative 3. This alternative would also include designation of a scenic ACEC for the Smith Rock area. Alternative 4 would also include designation of a Sage Grouse ACEC to focus special management attention on the breeding and wintering area near Millican. This alternative has the second most acreage in Special Management Area designations of the alternatives.

²⁰ For this comparison, areas designated as critical habitat in the Brothers - La Pine Resource Management Plan or as a result of other cooperative designations like winter closure areas were assumed to reflect a "primary" designation as used by the Upper Deschutes RMP.

The area available for livestock grazing in Alternative 4 would be about 41,000 acres less than the area available in Alternatives 1, 2 and 3, with the intent of reducing conflicts between livestock grazing and other uses on and adjacent to public land. This would reduce available AUMs by about nine percent. There would be fewer acres available for mineral sales over those identified as common to Alternatives 2 - 7, by about 20,000 acres. New ACEC designations indicate a greater potential for increased cost or limited availability of mineral materials within those areas, but do not prohibit specific development. Estimated forest or range products are based on the expected amount of treatment acres (in addition to the Wildland-urban interface (WUI) treatments identified as Common to Alternatives 2 - 7), and are expected to be at about 120,000 cubic feet (600,000 board feet) for Alternatives 2, 4, or 5, lower than that available under alternatives 3, 6, or 7. Alternative 4 would decrease the available area for long-term training from Alternative 1, the existing condition, by approximately 3,500 acres. Alternative 4 would provide an increase in the area available for permanent long-term military use over Alternative 3 of about 5,000 acres, less than Alternative 2, and about the same total area as the current use area.

The recreation emphasis in Alternative 4 would increase the amount of multi-use shared facilities compared to Alternative 3 to just over half the planning area, but would have more of an emphasis on managing separated use areas than either Alternatives 1 or 2. None of the areas would emphasize designation of separate facilities in the same geographic area. Areas managed exclusively for or with a non-motorized emphasis for trails would be increased over Alternative 1 from 3 percent to about 39 percent, with a greater emphasis on non-motorized emphasis areas (which provide motorized use on roads, non-motorized on trails) than on exclusive non-motorized use. About 93 percent of the geographic areas would emphasize recreation on designated motorized roads or roads and trails, with about 77 percent of the area available for motorized use on designated roads and trails during the winter use season.

Alternative 4 has slightly less land designated for retention (Z-1) than Alternatives 2 or 3. Alternative 4 has nearly the same amount of lands available for retention with the possibility of exchange (Z-2) as Alternative 2, in different configurations, but less still substantially less than Alternative 1. The total amount of land classified for disposal (Z-3) values in or between large blocks of public lands.

Designated transportation systems are altered over those in Alternative 1 and 2 by the addition of a transportation corridor south of Redmond to Deschutes Junction that would include a connection to Highway 97 near Quarry Road. This configuration would be the same for Alternatives 4-7. As in Alternative 3, this alternative would designate existing roads to serve as future collectors in the BLM system. By changing the designation of some existing collector roads to local roads, additional roads fall into a category that would make them available either for future designation or closure, depending upon resource conditions and demands. Alternative 4 would anticipate future local road densities lower or seasonally restricted in areas of high wildlife emphasis, or areas designated for non-motorized emphasis. In accordance with elements common to Alternatives 2 - 7, designation of a new transportation corridor would anticipate future relinquishment of a similar amount of historic roads in the Bend-Redmond geographic area.

Alternative 4 would close identical areas to all firearm discharge as Alternative 3, but would dramatically reduce the acreage closed to firearm discharge unless legally hunting (from 30% to 6%). Remaining closures would emphasize management in the Steamboat Rock and Northwest blocks.

This alternative also assumes inclusion of all elements listed in the Continued Management Direction and Common to Alternatives 2-7 sections.

Ecosystem Health and Diversity

Vegetation

Management in Alternative 4 would be the same as Alternative 2, except there would be no designations of ACECs specifically for old-growth juniper woodlands.

Riparian

Same as Alternative 2.

Wildlife

Planning Area

Alternative 4 would emphasize restoring terrestrial source habitats to provide for multiple species needs and maintain important conditions for deer and elk (see Table 2-3, Wildlife Emphasis Areas – All Species Habitats). By restoring vegetation cover types in their current distribution and restoring their structural stages that have declined substantially from the historical to the current period the planning area would be re-patterned so that the vegetation patches are more consistent with disturbance regimes and with the landform, climate, and biological and physical characteristics of the ecosystem. This alternative would also provide management direction to maintain or improve habitats to support healthy, productive and diverse populations and communities of native plants and animals (including species of local importance).

Geographic Areas

Under Alternative 4, Wildlife Emphasis Levels would be the same as described in Alternatives 2 -7. In addition, Alternative 4 would establish specific direction for geographic areas. This alternative would manage approximately 39 percent of the planning area with a primary emphasis, eight percent with a secondary emphasis, and 53 percent with a general emphasis (see Table 2-1). Individual species' habitat emphasis in each geographic area is shown in Tables 2-4 – 2-8.

Special Management Areas

Areas of Critical Environmental Concern (ACECs)

Special management area designations would include the Sage Grouse ACEC, a 16,257 acre area south and east of Horse Ridge, to provide for an undisturbed wintering area for sage grouse. Additionally, in the Cline Buttes area a smaller Juniper Woodland ACEC than identified in Alternative 3 would be designated, encompassing 6,000 acres. Objectives, guidelines and probable actions for this smaller area would be similar to Alternative 3 although there would be less emphasis on non-motorized recreation. The Alfalfa Market Road ACEC designated in Alternative 3 would also be designated in Alternative 4 with the same objectives, guidelines and probable actions.

Sage Grouse ACEC (16,257 acres)

Alternative 4 would protect and/or promote the health and integrity of 16,257 acres of sage grouse wintering habitat southeast of Horse Ridge. Land uses, recreation, and other activities that would adversely affect sage grouse or their wintering habitat would be prohibited or restricted in a way that maintains or enhances these values.

Fire Management: Consistent with the District Fire Management Plan, fire suppression activities and prescribed fire would be designed to maintain or enhance the special values of this ACEC.

Vegetation Treatments: Vegetation and wildlife habitat management projects would be designed to maintain or enhance the ACEC values. Long-term vegetation maintenance would be designed to emulate natural processes.

Special Forest and Range Products: Generally, harvesting of wood products and special forest and range products would not be allowed except in conjunction with restoration treatments or if it is consistent with the values of the ACEC. Firewood cutting would not be allowed.

Livestock Grazing: Livestock grazing would generally be allowed if consistent with ACEC goals and in accordance with Standards for Rangeland Health and Guidelines for Grazing Management and the RMP.

Minerals: Mineral material sales, development of mining claims, and geophysical exploration would be restricted to protect the values for which this ACEC was designated. Plans of operation would be submitted and approved by the BLM prior to any issuance of free use permits or sales contracts, or prior to the development of mining claims. Surface occupancy for fluid mineral leasing would not be allowed. Approved plans of operation would have stipulations to protect the values of this ACEC. Rockhounding would be limited to surface collection only.

Rights of Way: After the permanent BLM road network is established and implemented, new roads would only be considered if they replace a similar mileage of existing road. This area would be an avoidance area for new rights-of-way. Decommissioned roads would be obliterated and rehabilitated unless a compatible use is identified such as converting a road to a trail or preserving a historic route.

Land Ownership: The Sage Grouse ACEC would be designated Land Tenure Zone 2, which would allow adjustments provided there is no net loss of acreage within the ACEC and the management goals could still be attained. Any inholdings that are acquired within the ACEC would be become part of the ACEC.

Wilderness Study Areas

Management would be similar to Alternative 3.

Badlands WSA

Travel in the Badlands WSA (including ACEC) would be Limited to a designated network of the inventoried routes, with seasonal restrictions from December 1 – April 30.

Caves

Pictograph Cave would be closed seasonally (October 15 – May 1) for a bat hibernacula. Bolted climbing routes would be allowed in Pictograph Cave subject to site specific analysis.

Land Uses

Livestock Grazing

In this alternative (as in Alternatives 2 - 7), the BLM would use a formula to estimate potential for conflict and demand to help identify where problems are likely to occur (see section, Common to Alts 2-7, Livestock Grazing section, for definitions of conflict/demand, and details of how this formula works). In addition, in Alternative 4 livestock grazing would be modified as necessary so that conflicts do not exceed moderate, and demand is at least moderate. When conflicts are below the thresholds described above, they would be solved (in all alternatives) on a case-by-case basis by modifying livestock grazing, recreational use, fences, roads, and/or other uses, activities or developments as needed to reduce conflicts.

This Alternative would make some areas unavailable for livestock grazing. The closures would be mandatory, not based on voluntary permit relinquishment. Appendix G shows which allotments would be affected.

Minerals

Alternative 4 would emphasize managing conflicts with an emphasis on reducing mining conflicts with ecosystem and wildlife habitat management objectives in primary and secondary wildlife emphasis areas. 335,772 acres would be available for mineral material sales. Seasonal restrictions on all mineral operations would apply to 64,723 acres and surface occupancy for fluid mineral leasing would not be allowed on 65,364 acres. Mineral material sites would not be developed within 1/4 mile of residentially zoned areas or within 1/2 mile of designated recreation sites. Roads under BLM jurisdiction that feed into residentially zoned areas would not be used for mining-related traffic (see DEIS Map S-25, Minerals Alternative 4). New mineral material sites would not be developed on BLM-administered lands where alternative source(s) are available within 30 miles driving distance of (1) construction site(s) where the mineral materials would be used or (2) commercial distribution centers where the mineral materials would be sold as raw materials or as finished products.

The Prineville Reservoir Cinder Pit would be managed as in Alternative 3.

Military Uses

Alternative 4 would reduce disturbance by military operations to residents of adjacent private lands while providing a training area about the same size presently available.

Military training would be permitted on approximately 26,328 acres of BLM-administered lands. The training area permitted in this alternative would be south of Highway 126, and cross Powell Buttes Highway. It would also be south of Roberts Field and Deschutes County Fairgrounds, and approximately Horner Road. From north to south, the permitted area would be east of Roberts Field, the Redmond powerline, North Unit Canal, and Boonesborough Subdivision. It would be north of Bend Sewage Treatment Facility and BLM road 6589-B. The permitted area would extend to the private land ownership in the rural community of Powell Buttes. The old clay pit north of Highway 126 would also be included in the training area. Training would no longer be permitted in that portion of Area A around Pronghorn Resort and in the area under consideration for access, frontage, or bypass routes east of Highway 97.

Military use within ¼ mile of private lands would be limited to non-intrusive (i.e. does not involve large numbers of troops at one time or generate loud noise or dust) activities and ingress and egress from the training area.

Recreation

Alternative 4 provides a mix of recreation opportunities, but closes relatively few areas to all motorized use and instead relies more on limiting motorized use to roads in areas where non-motorized trails are provided. Approximately 60 percent of the planning area would be managed for multiple use on a shared system of roads and trails (including most of Cline Buttes, Bend/Redmond, and Millican Valley). Areas that allow motorized use on designated roads only (30 percent), while emphasizing non-motorized recreation on designated trails, include the Northwest (Squaw Creek), Tumalo, Maston Allotment, Alfalfa ACEC, Badlands, Skeleton Fire, Horse Ridge, South Millican, and areas south of Prineville Reservoir. Seasonal closures to motorized use occur in the Northwest (Squaw Creek), Tumalo, Badlands, and Highway areas. The Millican/West Butte Road would form the boundary between different seasons of use in Millican Valley. The largest closed area managed exclusively for non-motorized trail use is an area north of Prineville

Reservoir and east of the Crooked River, which would include trail connections between the Wild and Scenic River corridor and Prineville State Park. The North Millican area west of Millican/West Butte Road would be open a month later each season, allowing for riding opportunities in December. The area east of Millican/West Butte Road would be open year-round. However, under this alternative, the South Millican area would be closed to motorized trail use (see DEIS Map 18, Recreation Emphasis – Alternative 4).

Geographic Areas

Badlands

The WSA would be open seasonally to motorized use on a designated system of inventoried routes (Routes 4, 5, 6, 7, 8 and 9). Mechanized use (e.g., mountain bikes, horse drawn carts) would be allowed on designated routes. Designated parking and trailhead improvements would be a high priority under this alternative, in order to provide adequate parking for vehicles and trailers outside the WSA boundary during the period the area is closed to motorized use. The WSA would be managed as Limited to designated roads seasonally. Motor vehicle use would be seasonally restricted from December 1 to April 30.

Bend/Redmond

This alternative would be the same as Alternative 2.

Cline Buttes

Cline Buttes would be designated as Limited to designated roads and trails. Recreational uses are segregated more than Alternative 2, but less than Alternative 3. The Maston Allotment area east of Cline Falls Highway would be managed for motorized use on roads only while providing designated trails for non-motorized recreation. A portion of the historic Tumalo Canals on the east side of Barr Road would also be managed for non-motorized use. The majority of the dry canyon trails in the northwest portion of Cline Buttes are also managed for non-motorized use, but some of the dry canyon trails would be included in a motorized trail system, to allow for variety in trail riding opportunities.

Horse Ridge

Under this alternative, trail use in the area would be managed for non-motorized use. Motorized use would be restricted to a relatively sparse network of designated roads. Improvements would be made to parking areas, trailheads, and primitive camping areas to provide for better visitor services and protect resources at currently unmanaged dispersed use areas.

The entire area (Skeleton Fire area and Horse Ridge) would be limited to designated roads with the exception of those areas that would be Closed in Common to Alternatives 2 - 7 (area around Conestoga Hills, Rickard Road area, and the Horse Ridge ACEC/RNA).

La Pine

The entire La Pine block, would be designated as Limited to existing roads and trails except the area north of Rosland OHV Play Area and adjacent to La Pine State Park would be designated as Limited to designated roads only.

Mayfield

Under Alternative 4, the Mayfield area would be managed for shared use, with the larger block of public lands north of Alfalfa Market Road being managed for motorized use on both roads and trails. The area south of Alfalfa Market Road would be managed for non-motorized trail use, while keeping a select number of roads open. The main block

between Powell Butte Highway and Alfalfa Market Road would be Limited to designated roads and trails. The area south of Alfalfa Market Road would be Limited to designated roads only.

Millican Plateau

The majority of the Millican Plateau area would be managed for year-round OHV use on designated roads and trails. Small portions of the northern and western edges of this area would have additional motor vehicle restrictions for wildlife conservation or to better protect the Powell Butte ACEC. A small area would be closed to motor vehicle use year-round to reduce the incidence of illegal dumping.

The majority of the area would be Limited to designated roads and trails, available year-round. The northern tip of the area would be Limited to designated roads only with a smaller area Closed year-round to motor vehicle use. The western edge of the area (surrounding Powell Butte ACEC) would be Limited to designated roads only.

North Millican

Alternative 4 manages the area for seasonal motorized use on designated roads and trails. The area west of Millican/West Butte Road would be closed to motorized use from January 1 to April 30th, annually. The remainder of the area would be open to motorized use year-round on designated roads and trails. Additional trail miles would be provided in the eastern portion of the OHV area, in order to compensate for the loss of trail riding opportunities due to seasonal closure in the area west of Millican/West Butte Road. An additional play area would be developed in the area to compensate for the seasonal closure of the ODOT pit and the Cinder Pit in the Highway area. The majority of the area is managed for multiple use on a trail system predominantly designed and maintained for OHV use, with the exception of an area adjacent to the Badlands WSA (i.e., northwest of Road 6521) and the Dry Canyon area adjacent to State Highway 20. Trails in these areas would be provided solely for non-motorized use.

OHV use would be Limited to designated roads and trails May 1 thru December 31.

Northwest

The area would be managed for multiple use; however, there would be less emphasis placed on motorized recreation than on Alternative 2. Motorized trail use would be only considered if necessary to complete larger trail systems on adjacent Crooked River National Grasslands (CRNG) that require access or connections on BLM to create a functional system. A seasonal restriction on motorized use would be in place, consistent with adjacent policy on the CRNG; however, the area would remain open year-round for non-motorized use. Non-motorized trails and additional trailheads to access them would be provided. The Sisters Bouldering Area would be managed specifically for climbing use, and would be identifiable as BLM-administered land.

Motorized travel would be Limited to designated roads and motorized travel on BLM roads would be limited to April 1 thru November 30. Isolated parcels west of Squaw Creek would be designated Closed to motorized use.

Prineville

This alternative changes the management emphasis of the area, closing all the small, isolated tracts of BLM-administered land north of Prineville to motorized use. The larger blocks of BLM-administered land in this area would be managed as Limited to designated roads and trails year-round. The lands to the south of Prineville and north of Prineville Reservoir would be managed for use on designated roads only, or for use on designated roads and trails.

Small parcels located north and east of Prineville would be designated as Closed, while larger parcels located north of Prineville would be designated as Limited to designated roads and trails. The 640 acre Ochoco Reservoir parcel located north of State Highway 26 would be designated as Closed, the 120 acre parcel with a Dry Canyon feature would be also closed to motorized vehicles (see DEIS Map 11), and the BLM parcel near the Juniper Canyon summit would be designated as Limited to designated roads and motorized travel would be limited to March 16 thru November 30. Parcels located near Juniper Canyon would be Limited to designated roads. Parcels located at the south end of area would be Limited to designated roads and trails.

Prineville Reservoir

The entire area north of Prineville reservoir and east of the Crooked River would be managed for motorized use on designated roads and trails. The area south of Prineville Reservoir and east of State Highway 27 would be managed primarily for non-motorized trail use, while retaining motorized access for hunting, rockhounding, and other activities through a system of designated roads open year-round. Designated trail systems would connect to trailheads on either BLM or BOR/State Park managed lands.

OHV use would be Limited to designated roads and trails north of Prineville Reservoir and east of the Crooked River. Motorized use in the area north of Road 6590-B would be limited to May 1 thru November 30. The area south of Prineville Reservoir and east of State Highway 27 would be managed as Limited to designated roads (Taylor Butte travel is Limited under Common to Alternatives 2 - 7).

Smith Rock

This alternative would be the same as Alternative 2.

South Millican Area

Under this alternative, the use emphasis for South Millican would be on a relatively sparse network of roads for motorized use. Designated, non-motorized trails would be provided; however, the emphasis would be on developing trails on the adjacent Horse Ridge area and leaving fewer trails on the flatter South Millican area.

The entire South Millican area would be Limited to designated roads only, open year-round.

Steamboat Rock

Similar to Alternative 3 except that motorized use would be Limited to designate roads and trails and no full size vehicles would be allowed. All OHV use would be excluded from river corridors.

The main block would be Limited to designated roads and trails and Limited to Class I and III OHVs (no full size vehicles) except:

- Deschutes River corridor would be closed to all motorized use.
- Remaining portions of area subdivision would be managed as described for Common to 2 - 7.

Tumalo

The recreation management emphasis for the area would be on non-motorized trail. Motorized use would be limited to designated roads. Due its smaller size, the block of BLM-administered land south of Tumalo Reservoir would be Closed to motorized use, and would be managed for year-round recreation use on designated, non-motorized trails. Motorized use would be Limited to designated roads in main block north of Tumalo Reservoir.

The smaller block of BLM-administered land south of Tumalo Reservoir would be Closed to motorized use.

Transportation and Utilities

Alternative 4 would put an increased emphasis on combining BLM and transportation systems under other jurisdictions to integrate joint transportation management objectives. Alternative 4 would emphasize a transportation corridor allocation for minor county arterial connections between Bend and Redmond that would integrate and support county transportation plans and effectively combine impacts from the Quarry Street interchange. Consideration would be given to consolidating transportation and utility systems with consideration for ecological and recreational values, while providing for regional transportation systems and meeting regional objectives.

Regional Transportation

Alternatives 4-7 would connect with Deschutes Junction and include an interchange at Quarry Road. These alternatives would likely require relinquishment of approximately 19 miles of existing road right-of-way in the Bend-Redmond block at the same time the right-of-way grant was issued.

Local Transportation

Alternative 4 identifies 39 percent of the planning area in a primary wildlife emphasis designation and 39 percent in either a non-motorized emphasis or non-motorized exclusive designation. The recreation designations may or may not be included in the primary wildlife emphasis designation (see the Recreation and Wildlife Emphasis maps (DEIS Maps 18 and 26) for specific locations).

Right-of-Way Corridors

This alternative allocates a transportation/utility corridor adjacent to the Burlington Northern/Santa Fe right-of-way approximately 1.2 mile wide south of Redmond, extending to Deschutes Junction.

Land Ownership

Alternative 4 would improve the public land base to better provide for recreation and maintain or improve ecological conditions and wildlife habitat while not significantly reducing the amount of public lands in any portion of the planning area. Efficient and effective management would emphasize obtaining land patterns in favor of recreation, ecological condition and wildlife. Making public land available to other agencies would have a lower priority than other objectives.

Alternative 4 would designate approximately 353,334 acres as Z-1 to increase the spectrum of recreation opportunities and emphasize wildlife corridors. Blocks of public lands identified as Z-1 include the north Tumalo, Cline Buttes, Bend/Redmond Core, Steamboat Rock, Smith Rocks, Mayfield Pond, Badlands, Horse Ridge, Reservoir East, Reservoir West, Southeast, Highway, and the majority of public lands in La Pine north and south of the community. Other, smaller parcels of public land identified include Grizzly Mountain and Redmond Caves.

In addition, Alternative 4 would identify approximately 31,460 acres of isolated and fringe public parcels that are generally to retain, but may be disposed of through exchange for lands with higher public values. Some of these isolated and fringe parcels are located around Cline Buttes, around Steamboat Rock, the south Powell Buttes area, around Alfalfa, east of Grizzly Mountain, the south Tumalo area, the Skelton Cave area, the Bend/Redmond Core, and north and west of Wickiup Junction in La Pine. Other parcels include Powell Buttes, Juniper Acres, Millican, and north of Prineville Reservoir.

This alternative would create an exchange base to provide connectivity to Cline Buttes from Northwest, Steamboat Rock, and Tumalo blocks. Alternative 4 would consolidate public lands west and south of Cline Buttes while eliminating the public lands to the northwest, which have been heavily developed, and provide connectivity for and consolidation of the Powell Buttes parcels. It would also consolidate and provide connectivity between Grizzly Mountain and Ochoco National Forest. This alternative would also provide connectivity through the La Pine State Park and south of the community of La Pine.

Alternative 4 would identify approximately 10,102 acres of lands for disposal (Z-3) that generally do not provide substantial resource, public, or tribal benefits, and that may not be cost effective for the BLM to manage or that would represent a greater public benefit in other ownership. Selected public lands include isolated parcels between Bend and Redmond, isolated parcels northwest of Redmond and isolated and fringe parcels around Prineville.

In Alternative 4, approximately 8,512 acres would also be designated for community expansion (CE) and acquisition. The public lands identified for community expansion near Redmond are located east of Redmond, north of Highway 126, and west the North Unit canal; and south of Redmond, east of Highway 97, and north of the Pronghorn Destination Resort. In La Pine the areas identified are south of Wickiup Junction, east of Highway 97, and northeast and west of the community of La Pine. The parcels identified for acquisition include those between Smith Rock and Bend/Redmond, Tumalo and Cline Buttes, Northwest and Cline Buttes, Bend/Redmond and Cline Buttes, and Mayfield and the Badlands.

Public Health and Safety

Alternative 4 would close areas identical to those in Alternative 3 to all firearm discharge, but would dramatically reduce the acreage closed to firearm discharge unless legally hunting (from 30% to 6%). Remaining closures would emphasize management in the Steamboat Rock and Northwest blocks (see Table 2-21 for areas closed to all firearm discharge and Table 2-22 for areas closed to firearm discharge unless legally hunting).

Table 2-21 Closed to All Firearm Discharge; Alternative 4

Geographic Area	
Cline Buttes	Canal ACEC
Tumalo	1025-acre parcel south of Tumalo Reservoir Road
Bend Redmond	BLM land southwest of McGrath Road including Historic Roads ACEC
Mayfield	Airport Allotment
Horse Ridge	North of Rickard Road, South of Highway 20

Table 2-22 Closed to Firearm Discharge Unless Legally Hunting; Alternative 4

Geographic Area	
Steamboat Rock	All BLM land south of Lower Bridge Road outside Of the WSR corridor except for BLM land in the middle of the contiguous block
Northwest	All BLM land not closed to all firearm discharge Common to Alternatives 2 – 7.

Alternative 5

Alternative 5 would provide for ecosystem health and diversity by focusing efforts on maintenance and restoration of current conditions as described under the Key Concepts, and would anticipate lower amounts of treatment acres, especially prescribed fire acres, than alternatives with an historic emphasis. Alternatives 2, 4, and 5 would have this same emphasis. Alternative 5 would increase the amount of primary and secondary wildlife habitat emphasis in the planning area from current direction to about 60 percent of the planning area.²¹ There would be no additional management direction over that Common to Alternatives 2 - 7 for riparian areas or water quality or quantity, but Alternative 5 would include a change in Special Management Areas. This alternative would not include any new ACEC designations for Old Growth Juniper Woodlands ACECs, relying instead upon the overall conservation approach that is Common to Alternatives 2 - 7. The Cline Buttes area would include an expanded area for the Peck's Milkvetch ACEC, adding approximately 7,000 acres to the existing ACEC. Alternative 5 would also include the Tumalo Canals ACEC identified as Common to Alternatives 2 - 7. This configuration of ACECs would be the same for Alternatives 5 and 6.

There would be a reduction of areas available for livestock grazing under Alternative 5 over those identified in Alternative 1 of about 161,000 acres, reducing available AUMs by about 49 percent. This alternative has the greatest reduction of acres and AUMs available to livestock grazing. The intent of the reduction is to reduce conflicts between livestock grazing and other uses on and adjacent to public land. There would be fewer acres available for mineral sales over those identified in Alternative 1 by about 25%. New ACEC designations indicate a greater potential for increased cost or limited availability of mineral materials within those areas, but do not prohibit specific development. Estimated forest or range products are based on the expected amount of treatment acres (in addition to the Wildland-urban interface (WUI) treatments identified as Common to Alternatives 2 - 7), and are expected to be at about 120,000 cubic feet (600,000 board feet) for Alternatives 2, 4, or 5, lower than that available under Alternatives 3, 6, or 7. . . Alternative 5 would provide an increase in the area available for permanent long-term military use over Alternatives 3 and 4, although slightly less than Alternative 2 and about the same total area as the current use area.

The recreation emphasis in Alternative 5 would slightly reduce the amount of multiuse shared facilities compared to Alternative 4 to just over half the planning area, and would have more of an emphasis on managing separate uses in the same areas than any other alternative. Areas managed exclusively for or with a non-motorized emphasis for trails would be increased over Alternative 1 from 3 percent to about 33 percent, with a greater emphasis on non-motorized emphasis areas (which provide motorized use on roads, non-motorized on trails) than exclusive non-motorized. About 88 percent of the geographic areas would emphasize recreation on designated motorized roads or roads and trails, with about 61 percent of the area available for motorized use on designated roads and trails during the most popular winter use season.

Alternative 5 has less land designated for retention (Z-1), than Alternatives 1-4. Alternative 5 has the third largest amount of lands available for retention with the possibility of exchange (Z-2) of all of the alternatives. The total amount of land classified for disposal (Z-3) is roughly the same as Alternative 1, at about 1% of the planning area. Lands classified as Community Expansion (CE) lands are similar to Alternative 1 at about 1% of the planning area, and include limitations on future uses of community expansion lands to assure those lands would continue to provide interconnected open spaces. Designated transportation systems are altered over those in Alternative 1 and 2

²¹ For this comparison, areas designated as critical habitat in the Brothers - La Pine Resource Management Plan or as a result of other cooperative designations like winter closure areas were assumed to reflect a "primary" designation as used by the Upper Deschutes RMP.

by the addition of a transportation corridor south of Redmond to Deschutes Junction that would include a connection to Highway 97 near Quarry Road. This road configuration would be the same for Alternatives 4-7. As in Alternative 3, this alternative would designate existing roads to serve as future collectors in the BLM system. By changing the designation of some existing collector roads to local roads, additional roads fall into a category that would make them available either for future designation or closure, depending upon resource conditions and demands. Alternative 6 would anticipate future local road densities lower or seasonally restricted in areas of high wildlife emphasis, or areas designated for non-motorized emphasis. In accordance with elements common to Alternatives 2 - 7, designation of a new transportation corridor would anticipate future relinquishment of a similar amount of historic roads in the Bend-Redmond geographic area.

Alternative 5 would close the same areas to all firearm discharge as Alternative 3 and 4, but would increase the acreage closed to firearm discharge unless legally hunting to approximately 27% of the planning area. Closure areas of emphasis would include Steamboat Rock, Cline Buttes, and the La Pine area.

This alternative also assumes inclusion of all elements listed in the Continued Management Direction and Common to Alternatives 2-7 sections.

Ecosystem Health and Diversity

Vegetation

Special Status Plants

This alternative would be the same as Common to Alternatives 2 – 7, except one ACEC would be designated to expand the current Peck’s Milkvetch ACEC.

Shrub-Steppe Communities

This alternative would be the same as Alternative 2

Old-Growth Juniper Woodlands

This alternative would be the same as Alternative 2.

Lodgepole Pine and Ponderosa Pine Forest

This alternative would be the same as Alternative 2

Riparian and Aquatic

Same as Alternative 2.

Wildlife

Planning Area

In Alternative 5, management actions would be designed to restore terrestrial source habitats to provide for multiple species needs and maintain important conditions for deer and elk, restore vegetation cover types in their current distribution, and restore structural stages that have declined substantially from the historical to the current period. Vegetation patches would be re-patterned to be more consistent with disturbance regimes and with the landform, climate, and biological and physical characteristics of the ecosystem (see Table 2-3 Wildlife Emphasis Areas – All Species Habitats).

Geographic Areas

Alternative 5 would establish specific direction for the following geographic areas (see Common to Alternatives 2-7 for a description of primary, secondary and general wildlife emphases). Wildlife habitat emphases by geographic areas specific to species of local importance are on Tables 2-4 – 2-8. This alternative would manage approximately 29 percent of the planning area with a “primary” emphasis, 33 percent with a secondary emphasis, and 38 percent with a general emphasis for wildlife (see Table 2-1).

Special Management Areas

Areas of Critical Environmental Concern (ACECs)

Objectives/standards, guidelines and probable actions would be similar to Alternative 4, except there would be no ACECs designated specifically for old-growth juniper (Alfalfa and Juniper Woodland ACECs) and sage grouse would not be designated. Instead, the Peck’s Milkvetch ACEC would be expanded (to 11,144 acres from 4,073 acres) to further protect this special status plant and old-growth juniper values. As directed under Common to Alternatives 2 – 7, a 1,050-acre area would be designated as the Tumalo Canals ACEC to protect important historic resources. Travel in the Badlands WSA would be limited to a designated network of the inventoried routes, with seasonal restrictions on motorized used from July 15 to December 15, except for legal game retrieval purposes on designated inventory routes.

Total acres designated ACEC (existing and new) under Alternative 5 are 30,872.

Peck’s Milkvetch ACEC

The land tenure of the Peck’s Milkvetch ACEC would be expanded and designated Zone Z-2, which would allow adjustments, provided there is no net loss of acreage within the ACEC and the management goals could still be attained. Acquired lands within the ACEC would be added to the ACEC designation. Vegetation and wildlife habitat management projects would be an integral part of ACEC management and would be designed to maintain or enhance the ACEC values. Restoration/improvement of native plant communities, old-growth juniper woodlands, and habitat for raptors, neotropical birds and threatened, endangered or other special status plants and animals would be emphasized. Long-term vegetation maintenance would be designed to emulate natural processes.

Livestock grazing would be allowed if consistent with ACEC goals and in accordance with Standards for Rangeland Health and Guidelines for Grazing Management. Although Peck’s Milkvetch ACEC is expanded in this alternative, the mineral and rockhounding guidelines would be the same as in Continued Management Direction. The ACEC would be closed to firearm discharge unless hunting.

After the permanent BLM road network is established and implemented, new roads would only be considered if they replace a similar mileage of existing road. New rights of way would be located to emphasize co-location within existing utility corridors or along county roads or BLM arterial roads. Decommissioned roads would be obliterated and rehabilitated unless a compatible use was identified such as converting a road to a trail or preserving a historic route.

Caves

Pictograph Cave would be closed seasonally (October 15 – May 1) for bat hibernacula and would be closed to the installation of bolted climbing routes. All existing bolts and climbing hardware would be removed and the cave would be managed under Leave No Trace principles.

Land Uses

Livestock Grazing

In this alternative (as in Alternatives 2 – 7), the BLM would use a formula to estimate potential for conflict and demand to help identify where problems are likely to occur (see Chapter 2, Common to Alternatives 2-7, Livestock Grazing section for definitions of conflict/demand, and details of how this formula works). In addition, in Alternative 5 livestock grazing would be modified as necessary to reduce conflicts between livestock grazing and uses on public and private land across the entire planning area (“conflict” must be low). There would be an emphasis on reducing conflicts in the more “urban” areas (“demand” must be high). “Conflict”, “demand”, and “urban” are defined in Chapter 2 Management Direction Common to Alternatives 2-7, Livestock Grazing. When conflicts are below the thresholds described above, they would be solved (in all alternatives) on a case-by-case basis by modifying livestock grazing, recreational use, fences, roads, and/or other uses, activities or developments as needed to reduce conflicts.

This alternative would make some areas unavailable for livestock grazing. The closures would be mandatory, not based on voluntary permit relinquishment. Appendix G shows which allotments would be affected.

Minerals

Approximately 311,799 acres would be available for mineral material sales. Seasonal restrictions on all mineral operations would apply to 108,007 acres and surface occupancy for fluid mineral leasing would not be allowed on 49,295 acres. Mineral material sites would not be developed within 1/2 mile of residentially zoned areas. Roads under BLM jurisdiction that feed into residentially zoned areas would not be used for mining-related traffic. Mineral material site development would not occur within 1/8 mile of designated recreation sites in “rural” areas, nor within 1/2 mile of designated recreation sites in “urban” areas (See DEIS Map S-26, Minerals Alternative 5).

The Prineville Reservoir Cinder Pit would be managed as in Alternative 3.

Military Uses

This alternative would reduce disturbance by military operations to residents of adjacent private lands while providing a training area about the same size as presently available. The permitted area for military use would be approximately the same as in Alternative 2 except it closes Area A south of Roberts Field and Deschutes County Fairgrounds. Military training would be permitted on approximately 29,633 acres. The training area permitted in this alternative would be south of O’Neil Highway, crossing both Highway 126 and Powell Buttes Highway. It would also be south of Horner Road. From north to south, the permitted area would be east of the North Unit Canal, Roberts Field, again North Unit Canal, and Boonesborough Subdivision. It would be north of Bend Sewage Treatment Facility and BLM road 6589-B. The permitted area would be west of the private land ownership in the rural community of Powell Buttes. Military training would no longer be permitted in that portion of Area A around Pronghorn Resort and in the area under consideration for access, frontage, or bypass routes east of Highway 97.

A buffer would restrict the use of heavy equipment and vehicles within a half mile of private lands. Military training activities such as compass courses or infantry routes inside the buffer are appropriate activities, while equipment transport training is not.

Recreation

Alternative 5 provides a relatively high mixture of different recreation opportunities and varying management strategies/intensities. About 50 percent of the planning area would still be managed for multiple use primarily on shared roads and trails (Millican Valley and 3.4 of Cline Buttes). About 20 percent of the planning area would be managed for motorized use on roads only, while providing non-motorized trail opportunities. These areas would include the Northwest (Squaw Creek), Tumalo, Mayfield, Skeleton Fire areas, and the area south of Prineville Reservoir. A moderate amount of the planning area (approximately 12 percent) would be closed to motorized use and managed exclusively for non-motorized trail use. These areas include Horse Ridge, the Maston Allotment in Cline Buttes, the Steamboat Rock parcel, and a large area on both sides of the Chimney Rock segment of the lower Crooked River. The Bend Redmond block would be intensively managed for multiple use on separate trail systems. The North Millican area would be open for OHV use a month later to allow for riding opportunities in December (see DEIS Map 19, Recreation Emphasis – Alternative 5).

Geographic Areas

Badlands

Under Alternative 5, the Badlands WSA would be managed with almost the same layout (i.e., Routes 5, 6, 7, and 8) of designated, inventoried routes for motorized use as the present policy (Alternative 1, which reflects the settlement agreement from the Millican Lawsuit.), with the exception of Route 4 from the Route 8 junction to Route 5 Junction. Route 4 would be managed as a non-motorized route year-round. The WSA is closed to motorized use from July 15 to December 15, except for legal game retrieval on the designated, inventoried routes. The WSA would remain open to mechanized use year-round. This alternative also places relatively high emphasis on designation and improvement of parking areas to support use during periods when vehicles are restricted.

Bend/Redmond

This alternative would be similar to Alternatives 2 and 4, with an additional emphasis on OHV trail system and a non-motorized system in the same area. Development of separate trails for different uses would likely require a lower trail density for each type of use. This alternative places the greatest emphasis on trail signing, trail maps, separate motorized and non-motorized access points.

Allocations and allowable uses would remain the same as Alternatives 2 and 4.

Cline Buttes

The area would be divided into different use areas to reduce user conflicts. The Maston Allotment east of Cline Falls Highway would be designated Closed to motor vehicles. Most of the area between Barr Road and Cline Falls Highway would be managed for motorized use on designated roads. Recreation use in both these areas would be managed for an emphasis on non-motorized use occurring on designated roads and trails. The entire historic canal system (Tumalo Canals ACEC) east of Barr Road would be managed for foot use. The canals west of Barr Road are managed to emphasize a greater variety of non-motorized use, including equestrians and mountain bikes. The dry canyon complex would be managed almost exclusively for non-motorized use; however, at least one motorized trail would be located in the dry canyons.

The area west of Cline Falls Highway, east of Eagle Crest Phase III access road, and east of Barr Road would be limited to designated roads only. The Maston allotment east of Cline Falls Highway would be Closed to motor vehicles. The remainder of Cline Buttes would be limited to designated roads and trails year-round, with an emphasis on multiuse trail designation in the center and northern portions of the block.

Horse Ridge

Under this alternative, the Skeleton Fire area would be managed for motorized use on a few main roads, much like it is today. Designated trails would be developed for non-motorized use in the same area. Horse Ridge and the area between State Highway 20 and the old Highway would be managed for non-motorized trail use.

In addition to those areas that would be Closed Common to Alternatives 2 – 7 (area around Conestoga Hills, Rickard Road area, and the Horse Ridge ACEC/RNA) the following travel designations would apply to the Horse Ridge area:

- The Skeleton Fire area would be Limited to designated roads.
- Horse Ridge area would be designated as Closed to motorized vehicles. This closure extends northwest into the area between State Highway 20 and the old Highway 20 alignment (T18S, R14E, Sec. 30, 31,32; T19S, R14E, Sec. 5, 4, 3, 10; T18S, R13E, Sec. 25).

La Pine

Alternative 5 retains a high degree of public access and motorized use throughout BLM-administered lands in the La Pine area; however, this alternative does change the existing management from an Open designation to a designated system of roads and trails throughout the area.

The entire La Pine block, (except the river parcels) would be Limited to existing roads and trails, except the area north of Rosland OHV Play Area and adjacent to La Pine State Park, which would be designated as Limited to Designated Roads only.

Mayfield

Alternative 5 differs substantially from all other alternatives by managing the main Mayfield block for non-motorized trail use only. Under this alternative, motorized use would be allowed only on designated roads. The Airport allotment would continue to remain closed to motor vehicles. A separate designated trail system would be implemented that may use some of the existing roads in the area.

Main block and area south of Alfalfa Market Road would be designated Limited to designated roads only.

Millican Plateau

The northern portion of the area would be managed for year-round use on designated roads and trails. In addition, the smaller, isolated parcels and BLM-administered lands to the east of the Juniper Acres subdivision are either designated as Closed to motor vehicles or managed for use on designated roads only.

Motorized travel in the area north of Kitchen Hill would be Limited to designated roads and trails, except for:

- Isolated parcels located within and east of Juniper Acres subdivision are either Closed to motorized use or Limited to designated roads only (see DEIS Map 12).
- An area along the Crooked River Canyon (i.e., east of Road 6555-b) would be Closed to motorized vehicles.
- An area along the Crooked River and east of Millican/West Butte Road would be Closed to motorized vehicle use year-round.

North Millican

Alternative 5 manages the majority of the area for motorized use on a seasonal basis, by limiting OHV use to May 1 thru November 30. This alternative places more emphasis

on separating uses by designating the northwest portion of the area (dry canyon area) as Closed to motorized use year-round, and creating a designated, non-motorized trail system in this area. Mechanized use would be allowed year-round throughout the entire area.

The majority of the area south of Kitchen Hill would be managed as Limited to designated roads and trails. This area would be Closed to motorized use from January 1 to April 30, except the ODOT pit play area which would be open year-round, and the Dry Canyon and the area north of Trail 41, which would be Limited to designated roads only. Entire area would be open to non-motorized use on designated trails year-round.

Northwest

The area would be managed with an emphasis on development of non-motorized, designated trails that provide connectivity to a regional trail system, links to Sisters Community trails, and links to non-motorized trail systems on CRNG to the north. Motorized use would be Limited to designated roads only. A seasonal restriction on motorized use would be in place, consistent with adjacent policy on the CRNG; however, the area remains open year-round for non-motorized use. Non-motorized trails and additional trailheads to serve them are provided. The Sisters Bouldering Area would be managed specifically for climbing use, and would be identifiable as BLM-administered land. Motorized travel in main block Limited to designated roads. Motorized use would be limited to April 1 thru November 30. Isolated parcels west of Squaw Creek Closed to motorized travel, except for Sisters Bouldering Area (see Continued Management Direction).

Prineville

This alternative changes the management emphasis of the area, changing the management of the small, isolated tracts of BLM-administered land north of Prineville to motorized use on designated roads only. The larger blocks of BLM-administered land in this area would be managed as Limited to designated roads and trails year-round. The lands to the south of Prineville and north of Prineville Reservoir would be managed for use on designated roads only, or for use on designated roads and trails.

Small parcels located north and east of Prineville would be Closed, while larger parcels located north of Prineville would be Limited to designated roads. The 640-acre Ochoco Reservoir parcel located north of State Highway 26 would be designated Closed.

Prineville Reservoir

The area north of Prineville reservoir and immediately east of the Crooked River would be managed for exclusive non-motorized use. The area north of the upper end of Prineville Reservoir would be managed for motorized use on designated roads only. The area south of Prineville Reservoir and east of State Highway 27 would be managed primarily for non-motorized trail use, while retaining motorized access for hunting, rockhounding, and other activities through a system of designated roads open year-round. Designated trail systems would connect to trailheads on either BLM or BOR/ State Park managed lands.

OHV use would be Limited to designated roads and trails north of Prineville Reservoir and east of the Crooked River. Motorized use in the area north of Road 6590-B would be limited May 1 thru November 30. The area south of Prineville Reservoir and east of State Highway 27 would be managed as Limited to designated roads (Taylor Butte travel is Limited under Common to Alternatives 2 - 7).

Smith Rock

This alternative would be the same as Alternative 2.

South Millican

South Millican would remain as an OHV use area, and would be open for this use from September 15 to March 15. No new trail connections would be provided between the motorized trail system in South Millican and trails in the adjacent Deschutes National Forest.

OHV travel in South Millican would be Limited to designated roads and trails between February 15 and July 31.

Steamboat Rock

Steamboat Rock block would be Closed to motorized use year-round. The Crooked River Ranch emergency exit at 81st Street would be kept open, but otherwise all roads would be closed and only administrative use or access under permit would be allowed. The area would be managed to emphasize designated, non-motorized trail use and regional trail connectivity.

Main Steamboat Rock block would be Closed to motor vehicles.

Tumalo

This alternative would be the same as Alternative 4

Transportation and Utilities

Regional Transportation

In Alternative 5, management actions would be designed to consolidate transportation and utility systems with consideration for ecological and recreational values, while providing for regional transportation systems and meeting regional objectives. Alternative 5 would be the same as Alternatives 4, 6, and 7 with respect to the regional transportation system.

Local Transportation

Alternative 5 identifies 29 percent of the planning area in a primary wildlife emphasis designation and 34 percent in either a non-motorized emphasis or non-motorized exclusive designation. The recreation designations may or may not be included in the primary wildlife emphasis designation. Refer to the Recreation and Wildlife Emphasis maps for specific locations.

Land Ownership

This alternative prioritizes land actions, in the rural areas, that focus on recreation and indirectly on wildlife. In the urban area, community needs would be emphasized, where the majority of such requests originate, but follows recreation priority. Land actions that improve management ease or land patterns constitute a third priority. No proximity restrictions are applied to exchanges in Alternative 5, as are placed in Alternatives 4 and 6.

Management actions in Alternative 5 would retain public lands in the more urban areas to provide for moderate recreational uses, retain lands in the more rural areas to provide for intensive recreational uses and identify parcels that are generally to retain, but may be disposed of through exchange for lands with higher public values primarily for the purposes of connectivity, with a secondary emphasis on consolidation. In addition, this alternative would identify lands for disposal (Z-3) that generally do not provide substantial resource, public, or tribal benefits that may not be cost effective for the BLM

to manage or that would represent a greater public benefit in other ownership, and provide land for community needs and uses. Private parcels with access to public lands would also be acquired to promote connectivity for wildlife between larger blocks of habitat in the rural areas.

Approximately 373,914 acres would be designated for retention. Blocks of public lands that have already been identified as Z-1 include Tumalo, Cline Buttes, Bend/Redmond Core, Smith Rocks, Mayfield, Badlands, Horse Ridge, Reservoir East, Reservoir West, Southeast, Highway, and all public lands in La Pine except three parcels identified as Z-2. Other, smaller parcels of public land identified include Grizzly Mountain, Ochoco Reservoir, and Juniper Canyon.

The lands would be designated as Z-2 (approximately 10,517 acres). These parcels include those adjacent to cities, towns, and communities that may be exchanged for lands with higher public values for community expansion and other public purposes. In addition, isolated and fringe public parcels have been identified as Z-2 to provide connectivity between larger blocks and eliminate trail and road entries onto private lands in the rural areas. Parcels include Steamboat Rock, Redmond Caves, parcels around Alfalfa, parcels east of Juniper Acres, parcels east of Millican, and Skeleton Cave. In La Pine, three parcels are identified east of Wickiup Junction.

This alternative would designate the lands as Z-3 (approximately 13,249 acres). This alternative identifies isolated parcels between Bend and Redmond, isolated parcels northwest of Redmond, isolated and fringe parcels around Prineville, and a fringe parcel on the Powell Buttes block. Some but not all land previously identified as Z-3 lands in Brothers La Pine RMP would retain this designation.

Alternative 5 would designate the lands as Community Expansion (CE) lands (approximately 5,727 acres). The public lands identified for community expansion near Redmond are located east of Redmond and west of North Unit Canal and south of Redmond approximately 1.2 mile, and east of Highway 97. Public lands were identified for a park at Barnes Butte northeast of Prineville. Public lands were identified for a park between Eagle Crest Phase II and Phase III and south of Hwy 126. The parcel south of Bend Airport was identified for a park and public facilities. Two 40-acre parcels in Juniper Acres Subdivision were identified for parks. No public lands are identified for community expansion in La Pine.

Finally, Alternative 5 would designate parcels for acquisition. Acquisition parcels include those between Northwest and Cline Buttes, the National Grasslands and Ochoco National Forest, and Mayfield and the Badlands. A lesser emphasis would be to obtain lands to consolidate public lands in Zones 1 and 2 and to enhance public resource values, specifically in Southeast, Horse Ridge, and La Pine.

Public Health and Safety

Alternative 5 would close the same areas as Alternatives 3 and 4 to all firearm discharge, but would increase the acreage closed to firearm discharge unless legally hunting to approximately 27% of the planning area. Closure areas of emphasis would include Steamboat Rock, Cline Buttes, and the La Pine area.

The areas identified in Tables 2-23 and 2-24 below would be closed to all firearm discharge and to firearm discharge unless legally hunting, respectively.

Alternative 6

Alternative 6 would provide for ecosystem health and diversity by focusing efforts on maintenance and restoration of historic conditions as described under the Key Concepts, and would anticipate higher amounts of treatment acres, especially prescribed fire acres, than alternatives with a current distribution emphasis. Alternatives 3, 6, and 7 would have this same emphasis. Alternative 6 would increase the amount of primary and

Table 2-23 Closed to all firearm discharge; Alternative 5

Geographic Area	
Cline Buttes	Canal ACEC
Tumalo	1025-acre parcel south of Tumalo Reservoir Road
Bend Redmond	BLM land southwest of McGrath Road including Historic Roads ACEC
Mayfield	Airport Parcel
Horse Ridge	North of Rickard Road, South of Highway 20

Table 2-24 Closed to firearm discharge unless legally hunting; Alternative 5

Geographic Area	
Steamboat Rock	All BLM land south of Lower Bridge Road outside of the WSR corridor
Northwest	All BLM land not closed to all firearm discharge Common to Alternatives 2 – 7.
Cline Buttes	Entire Cline Buttes block except for closures to all firearm discharge Common to Alternatives 2-7
Mayfield Pond	Main block – South of Alfalfa Market Road
Prineville Reservoir	BLM lands contiguous and east of Lower Crooked WSR and contiguous and west of BOR/Prineville Reservoir
Millican Plateau	BLM lands contiguous and west of the Lower Crooked WSR and east of Road 6665
La Pine	Entire block except for parcels closed to all firearm discharge Common to Alternatives 2 - 7

secondary wildlife habitat emphasis in the planning area from current direction to about 61 percent of the planning area.²² There would be no additional management direction over that Common to Alternatives 2 - 7 for riparian areas or water quality or quantity, but Alternative 6 would include a change in Special Management Areas. This alternative would not include any new ACEC designations for Old Growth Juniper Woodlands ACECs, relying instead upon the overall conservation approach that is Common to Alternatives 2 - 7. The Cline Buttes area would designate an expanded area for the Peck's Milkvetch ACEC, expanding it from the current 4,000 acres to about 11,000 acres. Alternative 6 would also include the Tumalo Canals ACEC identified as Common to Alternatives 2 - 7, and the designation of a scenic ACEC for the Smith Rock area.

There would be a reduction of areas available for livestock grazing under Alternative 6 over those identified in Alternative 1 of about 42,000 acres, reducing available AUMs by about six percent. The intent of the reduction is to reduce conflicts between livestock grazing and other uses on and adjacent to public land. This alternative would be the same as Alternative 3 regarding available minerals. There would be fewer acres available for mineral sales over those identified in Alternative 1 by about 16%. New ACEC designations indicate a greater potential for increased cost or limited availability of mineral materials within those areas, but do not prohibit specific development. Estimated forest or range products are based on the expected amount of treatment acres (in addition to the Wildland-urban interface (WUI) treatments identified as Common to Alternatives 2 - 7), and are expected to be at about 150,000 cubic feet (750,000 board feet) for Alternatives 3, 6, or 7, more than that available under Alternatives 2, 4, or 5. Alternative 6 would nearly double the area available for permanent long-term military use over Alternative 1.

The recreation emphasis in Alternative 6 would substantially reduce the amount of multiuse shared facilities compared to Alternative 1 to about 41 percent of the planning area, and would have more of an emphasis on segregating uses than on managing separate uses in the same areas. Areas managed exclusively for or with a non-motorized emphasis for trails would be increased over Alternative 1 from 3 percent to about 39 percent, with a greater emphasis on exclusive non-motorized areas than on motorized emphasis areas (which provide motorized use on roads, non-motorized on trails). About 79 percent of the geographic areas would emphasize recreation on designated motorized roads or roads and trails, with about 51 percent of the area available for motorized use on designated roads and trails during the winter use season.

Alternative 6 has more land designated for retention (Z-1), than Alternatives 1, 4, 5, or 7, but less than Alternatives 2 and 3. Alternative 6 has the third lowest amount of lands available for retention with the possibility of exchange (Z-2) of all of the alternatives. The total amount of land classified for disposal (Z-3) is slightly less than Alternative 1, at about 3% of the planning area. Lands classified as Community Expansion (CE) lands are similar to Alternative 1 at about 1% of the planning area, and include limitations on future uses of CE lands for parks, open space, and open community infrastructure needs, and limitations on exchange lands to obtain equitable habitat or recreational values.

Designated transportation systems would be altered over those in Alternative 1 and 2 by the addition of a transportation corridor south of Redmond to Deschutes Junction that would include a connection to Highway 97 near Quarry Road. This road configuration would be the same for Alternatives 4-7. As in Alternative 3, this alternative would designate existing roads to serve as future collectors in the BLM system. By changing the designation of some existing collector roads to local roads, additional roads fall into a category that would make them available either for future designation or closure,

²² For this comparison, areas designated as critical habitat in the Brothers - La Pine Resource Management Plan or as a result of other cooperative designations like winter closure areas were assumed to reflect a "primary" designation as used by the Upper Deschutes RMP.

depending upon resource conditions and demands. Alternative 6 would anticipate future local road densities to be lower or seasonally restricted in areas of high wildlife emphasis, or areas designated for non-motorized emphasis. In accordance with elements common to Alternatives 2 - 7, designation of a new transportation corridor would anticipate future relinquishment of a similar amount of historic roads in the Bend-Redmond geographic area.

Compared with Alternatives 3-5, Alternative 6 would reduce the acreage closed to all firearm discharge, only continuing closures associated with ACECs. Alternative 6 would also close less acreage to firearm discharge unless legally hunting (14%); closures of this second type would remain in urban parcels, the Badlands area, and lands near the Crooked River WSR.

This alternative also assumes inclusion of all elements listed in the Continued Management Direction and Common to Alternatives 2-7 sections.

Ecosystem Health and Diversity

Vegetation

Same as Alternative 3 except there would be no designations of ACECs specifically for old-growth juniper woodlands.

Riparian and Aquatic

This alternative would be the same as Alternative 3.

Wildlife

Planning Area

Alternative 6 (like Alternatives 3 and 7) would emphasize restoring terrestrial source habitats to provide for species needs across their historic distribution with a focus on biological diversity, by increasing the geographic extent of vegetation cover types and structural stages that have declined substantially from the historical to the current period. This alternative would provide direction to re-pattern the vegetation patches so they become consistent with natural disturbance regimes and with the landform, climate, and biological and physical characteristics of the ecosystem.

Representative components of naturally occurring vegetative types would be established across the planning area within the historic range of plant communities in sufficient size and frequency to serve as source habitats for species groups that are dependent upon those habitats. General wildlife emphasis by geographic area is displayed in Table 2-3, Wildlife Emphasis Areas, All Species Habitats.

Geographic Area

Alternative 6 would establish specific direction for the following geographic areas (see section Common to Alternatives 2-7 for a description of primary, secondary and general wildlife emphases). This alternative would manage approximately 54 percent of the planning area with a primary emphasis, 7 percent with a secondary emphasis, and 39 percent with a general emphasis for wildlife (see Table 2-1). Wildlife habitat emphases by geographic area and specific to species of local importance can be found in Tables 2-4 – 2-8, Wildlife Emphasis Areas:

Hydrology

Watershed Function

This alternative would be the same as Alternative 3.

Special Management Areas

Areas of Critical Environmental Concern (ACECs)

This alternative would be similar to Alternative 5 and would include the Smith Rock ACEC (designated in Alternative 3). Objectives, guidelines and probable actions for ACECs designated in Alternative 6 have been discussed under Alternatives 3 and 5. The Badlands ACEC would be closed to both motorized and mechanized use, except Reynolds Pond, which would be open to mechanized use. For Alternative 6, the Public Health and Safety guidelines for the Peck's Milkvetch ACEC would not restrict firearm discharge.

Total acres designated ACEC (existing and new) under Alternative 6 would be 33,102.

Caves

Pictograph Cave would be closed seasonally (October 15 – May 1) for bat hibernacula. The cave would be closed to the installation of bolted climbing routes. All existing bolts and climbing hardware would be removed and the cave would be managed under Leave No Trace principles.

Land Uses

Livestock Grazing

In this alternative (as in Alternatives 2 - 7), the BLM would use a formula to estimate potential for conflict and demand to help identify where problems are likely to occur. In Alternative 6 livestock grazing would be modified as necessary to reduce conflicts between livestock grazing and uses on public and private land in "rural" areas ("demand" must be high), but not in the rest of the planning area. "Demand" and "rural" are defined in Chapter 2 Management Direction Common to Alternatives 2-7, Livestock Grazing. When conflicts are below the thresholds described above, they would be solved (in all alternatives) on a case-by-case basis by modifying livestock grazing, recreational use, fences, roads, and/or other uses, activities or developments as needed to reduce conflicts.

This alternative would make some areas unavailable for livestock grazing. The closures would be mandatory, not based on voluntary permit relinquishment. Appendix G shows which allotments would be affected.

Minerals

In addition to methods to manage conflicts with residents as outlined in Alternative 2, Alternative 6 would provide direction to reduce mining conflicts with recreation and wildlife habitat in "rural" areas.

Mineral material sites would not be developed within 1/8 mile of residentially zoned areas. Roads under BLM jurisdiction that feed into residentially zoned areas could be used for mining-related traffic only if alternate routes are not available. Mineral material site development would not occur within 1/8 mile of designated recreation sites in "urban" areas, nor within 1/2 mile of designated recreation sites in "rural" areas. Under

this alternative, approximately 347,080 acres would be available for mineral material sales. Seasonal restrictions on all mineral operations would apply to 113,265 acres and surface occupancy for fluid mineral leasing would not be allowed on 49,295 acres (see DEIS Map S-27, Minerals Alternative 6).

The Prineville Reservoir Cinder Pit would be managed as in Alternative 3.

Military Uses

This alternative allows for addition of new training lands in order to reduce concentration of military training on remaining lands. Three rotational training areas would be designated so that one training area would be available for training for a specific duration, estimated at three years per area. Alternative 6 would permit military training while reducing concentration of impacts on a single area and promoting restoration of areas heavily impacted by recreational activity and dumping. The total area of public lands for military uses would be 55,665 acres.

Military use would be allowed in those areas identified for Alternative 6 on DEIS Map 36. The training area permitted in this alternative would be south of O'Neil Highway, crossing both Highway 126 and Powell Buttes Highway. It would also be south of Roberts Field, Deschutes County Fairgrounds, and the new Redmond Golf Course. From north to south, the permitted area would remain approximately a mile east of the public land boundary, in the same alignment as currently provided. It would be north of the Bend Sewage Treatment Facility, Bend Airport, and BLM road 6589-B. The permitted area would be west of the private land ownership in the rural community of Powell Buttes.

Recreation

Like Alternative 5, this alternative provides a relatively high mixture of different recreation opportunities and varying management strategies/intensities. As compared to Alternative 5, a slightly smaller portion (40 percent) of the planning area would still be managed for multiple use primarily on shared roads and trails (Millican Valley and Bend/Redmond areas). A slightly smaller portion (17 percent) of the planning area would be managed for motorized use on roads only, while providing non-motorized trail opportunities. These areas would include the Northwest (Squaw Creek), Steamboat Rock parcel, and Skeleton Fire areas; and the area south of Prineville Reservoir. Alternative 6 closes the highest percentage of the area to motorized use year-round (19.5 percent), and most of these areas would be managed for non-motorized trail use. Unlike all other alternatives, one large block of land including the Badlands WSA, a portion of the North Millican OHV area, and Horse Ridge would be closed to motorized use year-round. This alternative also proposes the most intensive and high cost management strategy for Cline Buttes, essentially limiting motorized travel to designated roads while providing designated trails for non-motorized users. The North Millican area would be closed during the winter and early spring, resulting in increased use of Millican Plateau, Bend/Redmond, and Mayfield areas for OHV use. Alternative 6 represents the largest shift in management emphasis for the La Pine area.

The foundation of Alternative 6 for Recreation is the guidance that is Continued Management Direction and Common to Alternatives 2 - 7. Most of this guidance applies to the planning Area as a whole. Differences between Alternative 6 and the other alternatives are largely in how the Objectives are met across the planning area (see DEIS Map 20, Recreation Emphasis – Alternative 6).

Geographic Areas

Badlands

Under Alternative 6, the Badlands WSA would be managed for primitive, non-motorized and non-mechanized recreation. The WSA would be closed to motor vehicle

and mechanized use year-round. The WSA would be closed to mechanized use, (e.g., mountain bikes, horse drawn carts, etc.) except for the area immediately surrounding Reynolds Pond (See DEIS Map 7, Special Management Areas). Motorized use closures would encompass an additional 5,000 acres to the southeast of the WSA (see North Millican– Alternative 6). Due to the vehicle closures, a high priority would be given to providing designated parking areas and trailhead improvements at major entry points. WSA would be closed to motorized and mechanized use year-round, except for area around Reynolds Pond.

Bend/Redmond

Under Alternative 6, the Bend/Redmond area would be managed similarly to Alternative 3; however, Alternative 6 does not include motorized trails north of State Highway 126. Under Alternative 6, this northern area would be designated as Limited to designated roads only, with year-round use.

Area south of State Highway 126 would be designated as Limited to designated roads and trails. Area north of State Highway 126 would be Limited to designated roads only.

Cline Buttes

Motorized use would be limited to designated roads and trails. The Cline Buttes block would be managed with an emphasis on multi-use trails in the center and north portions of the area. Designated trails would be provided for non-motorized use throughout the entire block. Like motorized users, Equestrians and mountain bikes would be limited to a designated trail system

Entire Cline Buttes block would be Limited to designated roads and trails.

Horse Ridge

This alternative would be the same as Alternative 5.

La Pine

This alternative would be the same as Alternative 3, except isolated public land blocks within the La Pine area would be managed as Closed to motor vehicles. These blocks generally range from 40 acres to 500 acres in size

Mayfield

This alternative would be the same as Alternative 4

Millican Plateau

A smaller area is Closed to motor vehicles adjacent to, and west of the Crooked River. A buffer area around Powell Butte RNA that would be Limited to designated roads only. The area north of Reservoir Road, east of Johnson Market Road, and west of Crooked River would be designated as Limited to designated roads and trails, except:

1. A buffer area 1.2-mile from Crooked River Canyon rim.
2. Area surrounding eastern portion of Powell Butte RNA limited to designated roads only (see DEIS Map 13).

North Millican

Alternative 6 separates recreational uses to a greater degree, and places greater restrictions on recreation use to benefit wildlife species than Alternative 5. Under

Alternative 6, approximately 5,000 acres of the existing North Millican OHV area would be managed as a non-motorized use area, with designated, non-motorized trails. The remainder of the area would be managed for seasonal motorized use, with the area closed to motorized use from December 1 through April 30th, annually. As in all the other action alternatives, the trail system in the area would be revised to maintain a functional system on both sides of Millican/West Butte Road, if the road becomes a paved, truck route. The number of trail crossings of Millican/West Butte Road would be reduced, and a frontage trail may be needed to collect trail use and lead it to a smaller number of grade separated crossings.

The area would be managed as Limited to designated roads and trails, seasonally (closed December 1 through April 30), except for an approximately 5,000 acre area managed as Closed to motorized vehicles (see DEIS Map 13 – Travel Management Designations, Alternative 6).

Northwest

The area would be managed with an emphasis on development of non-motorized, designated trails that provide connectivity to a regional trail system, links to Sisters Community trails, and links to non-motorized trail systems on Crooked River National Grasslands (CRNG) to the north. Motorized use would be limited to designated roads only in the main block, and would be prohibited in the isolated parcels west of Squaw Creek (except in a designated entry into the Sisters Boulderling Area). A seasonal restriction on motorized use would be in place, consistent with adjacent policy on the CRNG; however, the area remains open year-round for non-motorized use. Non-motorized trails and additional trailheads to serve them are provided. The Sisters Boulderling Area would be managed specifically for climbing use, and would be identifiable as BLM-administered land.

Motorized travel in main block would be Limited to designated roads. All BLM roads in this area would be Closed to motorized use seasonally, from December 1 to March 31. Isolated parcels west of Squaw Creek would be Closed to motorized travel, except for Sisters Boulderling Area.

Prineville

This alternative changes the management emphasis of the area, changing the management of the small, isolated tracts of BLM-administered land north of Prineville to motorized use on designated roads only. The larger blocks of BLM-administered land in this area would be managed as Limited to designated roads and trails year-round. The lands to the south of Prineville and north of Prineville Reservoir would be managed for use on designated roads only, or for use on designated roads and trails.

Motorized access on designated roads would be retained in the Eagle Rock area – providing access to Rockhounding sites.

Prineville Reservoir

The area is managed for motorized vehicle use on designated roads seasonally, with lands around the north and south side of the upper portion of Prineville Reservoir Closed to motor vehicles from December 1 to April 30. The area immediately east of the Crooked River and north of the reservoir is Closed to motor vehicles year-round. Lands at the south end of this area, furthest away from Prineville Reservoir are Limited to motorized use on roads only.

The area north of Prineville Reservoir and immediately east of the Crooked River would be designated Closed to motor vehicles. The area north of the upper end of Prineville Reservoir would be designated as Limited to designated roads, seasonally (Closed from December 1 to April 30). The area east of State Highway 27 is Limited to designated roads year-round.

Smith Rock

This alternative would be the same as Alternative 2

South Millican

This alternative would be the same as Alternative 5, except the area would be seasonally Closed to motorized use from March 15 to September 15.

Steamboat Rock

This alternative would be the same as Alternative 3

Tumalo

This alternative would be the same as Alternative 3, except that it places an emphasis on connections to regional trails.

Transportation and Utilities

Alternative 6 would consolidate transportation and utility systems with consideration for ecological and recreational values, while providing for regional transportation systems and meeting regional objectives.

Alternative 6 identifies 54 percent of the planning area in a primary wildlife emphasis designation and 38 percent in either a non-motorized emphasis or non-motorized exclusive designation. The recreation designations may or may not be included in the primary wildlife emphasis designation. Refer to the Recreation and Wildlife Emphasis maps for specific locations.

Land Ownership

This alternative is the same as Alternative 5, except the priorities for rural and urban lands are reversed. The alternative prioritizes land actions in the urban areas. It directly emphasizes recreation and indirectly wildlife; because most recreation activities involving land ownership would have corresponding activities involving wildlife. The alternative does not prioritize wildlife before recreation. Community needs would be emphasized in the rural area, where few requests originate and only as a secondary priority. An emphasis on management ease or land patterns would be coincidental with recreation or wildlife activities in the same location.

This alternative would designate the lands as Z-1 (approximately 344,376 acres) in the more urban areas to provide for intensive recreational uses, and lands in the more rural areas to provide for moderate recreational uses. Blocks of public lands identified as Z-1 include Tumalo, Cline Buttes, Steamboat Rock, Bend/Redmond Core, Smith Rocks, Mayfield, Badlands, Horse Ridge, Reservoir West, Reservoir East, Southeast, and Highway. In La Pine, Z-1 lands would be north and east of Wickiup Junction. Other, smaller parcels of public land include Grizzly Mountain and Juniper Canyon.

Approximately 39,694 acres would be designated for retention with the option of disposal. Isolated and fringe public parcels have also be identified as Z-2 to provide connectivity between larger blocks and eliminate trail and road entries onto private lands in the rural areas. These parcels are located around Alfalfa, east of Juniper Acres, east of Millican, and Skelton Cave. The majority of the public lands in La Pine are Z-2, extending south from Wickiup Junction to the boundary of the project area. Parcels were not specifically selected to correspond with private parcels desired for acquisition.

Lands designated for disposal (Z-3) would encompass approximately 14,222 acres. Parcels suitable for disposal include isolated parcels between Bend and Redmond,

isolated parcels in and northwest of Redmond including the Redmond Caves, isolated and fringe parcels around Prineville, and a fringe parcel on the Powell Buttes block. Four parcels designated as Z-3 in La Pine are located west of Wickiup Junction.

Alternative 6 would also designate approximately 5,115 acres as Community Expansion (CE) lands. The public lands identified for community expansion near Redmond are located east of Redmond and west of the North Unit Canal, south of Redmond Airport, and south of Redmond and east of Highway 97. Public lands identified for a park are between Eagle Crest Phase II and Phase III and south of Highway 126. Public lands identified for a park are east of Prineville, at Barnes Butte. Public lands identified for a park and public facilities are south of Bend Airport. Two 40-acre parcels in Juniper Acres Subdivision were identified for parks. Three parcels selected for parks and public facilities are in La Pine.

This alternative would emphasize designating parcels for acquisition to improve wildlife connectivity and to provide public access. Parcels of interest include those between Smith Rock and Bend/Redmond, Tumalo and Cline Buttes, Northwest and Cline Buttes, Bend/Redmond and Cline Buttes, Mayfield, and the Badlands.

Public Health and Safety

Compared with Alternatives 3-5, Alternative 6 would reduce the acreage closed to all firearm discharge, only continuing closures associated with ACECs. Alternative 6 would also close less acreage to firearm discharge unless legally hunting (14%); closures of this second type would remain in urban parcels, the Badlands area, and lands near the Crooked River WSR.

In this alternative, the areas identified in Table 2-25 would be closed to all firearm discharge. Those areas in Table 2-26 would be closed to firearm discharge unless legally hunting.

Table 2-25 Closed to All Firearm Discharge; Alternative 6

Geographic Area	
Cline Buttes	Canal ACEC
Bend/Redmond	BLM land southwest of McGrath Road including Historic Roads ACEC

Table 2-26 Closed to Firearm Discharge Unless Legally Hunting; Alternative 6

Geographic Area	
Northwest	All BLM land not closed to all firearm discharge Common to Alternatives 2-7.
Tumalo	1025-acre parcel south of Tumalo Reservoir Road, Main block north of Tumalo Reservoir
Mayfield Pond	Airport Allotment
Prineville Reservoir	BLM lands contiguous and east of Lower Crooked WSR and contiguous and west of BOR/Prineville Reservoir
Horse Ridge	North of Rickard Road, South of Highway 20, BLM land between new and old Highway 20
Badlands	Entire block except ½ mile around Badland Rock from March 1 to August 31
North Millican	Dry Canyon just north of Highway 20

Alternative 7 (Preferred Alternative)

Alternative 7 would provide for ecosystem health and diversity by focusing efforts on maintenance and restoration of historic conditions as described under the Key Concepts, with some modifications to recognize the limitations of WUI, social expectations, and potential for success. Alternative 7 has higher amounts of treatment acres, especially prescribed fire acres, than alternatives with a current distribution emphasis. Alternative 7 would manage about 69 percent BLM-administered lands within the planning area for primary and secondary wildlife emphasis. Alternative 7 differs from Alternative 6 by reducing the wildlife habitat effectiveness guidelines in the North Millican area. There would be no additional management direction over that Common to Alternatives 2 - 7 for riparian areas or water quality or quantity, but Alternative 7 would include a change in Special Management Areas. This alternative would not include any ACEC designations specifically for Old Growth Juniper Woodlands, relying instead upon the overall conservation approach that is Common to Alternatives 2 - 7. The Cline Buttes area would include an expansion of the Peck's Milkvetch ACEC, but the expansion would be smaller than that of Alternatives 5 and 6. The expansion would increase the area of the ACEC by about 6,000 acres. The northwest corner of the ACEC expansion included in Alternatives 5 and 6 but excluded in Alternative 7 is an area where plant populations have not been found. Alternative 7 would also include the Tumalo Canals ACEC identified as Common to Alternatives 2 - 7, but would not include the designation of a scenic ACEC for the Smith Rock area.

Alternative 7 would reduce areas available for livestock grazing in over those identified in Alternative 1 by up to about 121,000 acres, reducing available AUMs by about 20 percent, if all permittees willingly relinquished their permits. This would reduce conflicts between livestock grazing and other uses on and adjacent to public land. About half of these acres would still be available as Reserve Forage Allotments, but the AUMs would not be allocated to specific permittees. Most closures would be dependent on permittees voluntarily relinquishing permits.

This alternative would be similar to Alternative 2 regarding the area available for salable minerals. The Peck's Milkvetch ACEC designation indicates a greater potential for increased cost or limited availability of mineral materials within those areas, but does not prohibit specific development. The area removed from the proposed expansion of the Peck's Milkvetch ACEC described in Alternatives 5 and 6 includes existing and potential aggregate sites with a lower potential for conflict than other known sites. There would be fewer acres available for mineral sales over those identified in Alternative 1 by about 15 percent.

Estimated forest or range products are based on the expected amount of treatment acres (in addition to the Wildland-urban interface (WUI) treatments identified as Common to Alternatives 2 - 7), and are expected to be at about 150,000 cubic feet (750,000 board feet) for Alternatives 3, 6, or 7, more than that available under alternatives 2, 4, or 5. Alternative 7 would nearly double the area available for permanent long-term military use over Alternative 1, and would include two extended training areas for larger training exercises or for alternate sites during rehabilitation of core training areas.

The recreation emphasis in Alternative 7 would reduce the acreage of multi-use shared facilities (roads and trails) from about 80 percent in Alternative 1 to approximately 38 percent, with a reduced emphasis on managing separate uses in the same areas compared to Alternative 6. Areas managed exclusively for or with a non-motorized emphasis for trails would be increased over Alternative 1 from three percent to about 44 percent. About 76 percent of the geographic areas would emphasize motorized recreation on designated roads or roads and trails, with about 66 percent of the area available for motorized use on designated roads and trails during the winter use season. Alternative 7

does differ from Alternative 6 by adding some seasonal limitations to the area or mileage of the designated OHV trail system in North Millican, which comprises approximately 13.5 percent of the planning area.

Alternative 7 has the least amount of land designated for retention (Z-1) than any of the alternatives save Alternative 1. Alternative 7 deemphasizes the lands available for exchange, reducing them by more than half compared to Alternative 1. The total amount of land classified for disposal (Z-3) is the third highest of all of the alternatives at about 5% of the planning area. Lands classified as Community Expansion (CE) lands are similar but about 2,000 acres less than Alternative 1 at about 1% of the planning area, and include limitations on future uses of the land adjacent to the proposed transportation corridor between Redmond and Bend Community Expansion lands for parks, open space, and open community infrastructure needs.

Designated transportation systems would be altered over those in Alternative 1 and 2 by the addition of a transportation corridor south of Redmond to Deschutes Junction that would include a connection to Highway 97 near Quarry Road. This corridor configuration would be the same for Alternatives 4-7. As in Alternative 3, this alternative would designate existing roads to serve as future collectors in the BLM system. By changing the designation of some existing collector roads to local roads, additional roads fall into a category that would make them available either for future designation or closure, depending upon resource conditions and demands. Alternative 7 would anticipate future local road densities lower or seasonally restricted in areas of high wildlife emphasis, or areas designated for non-motorized emphasis. In accordance with elements common to Alternatives 2 - 7, designation of a new transportation corridor would anticipate future relinquishment of a similar amount of historic roads in the Bend-Redmond geographic area.

Alternative 7 firearm discharge management would close the most acreage to all firearm discharge of any alternative (3% of the planning area); including additional closures above Common to Alternatives 2 - 7 management in urban, high-use areas. However, Alternative 7 would close less acreage to firearm discharge unless legally hunting than Alternatives 3 and 5. This alternative would emphasize management in the Badlands area, Steamboat Rock, the Crooked River WSR, the Tumalo Block, and parts of Cline Buttes.

This alternative also assumes inclusion of all elements listed in the Continued Management Direction and Common to Alternatives 2-7 sections.

Ecosystem Health and Diversity

Vegetation

Alternative 7 would emphasize restoration and enhancement of healthy and diverse ecosystems. Similar to Alternative 3, it would utilize the “historic range of variability” and source habitats as a reference guide for restoring the extent and structure of native plant communities within the planning area. However, Alternative 7 would also recognize the limitations to restoring these conditions everywhere in the planning area. Since so much of the planning area has been and will continue to be influenced by human uses and development, restoration of these conditions may not occur to the same extent everywhere throughout the planning area. For instance, guidance for the WUI would not necessarily focus on restoration toward historic conditions as much as providing for public and firefighter safety and reducing the potential for high intensity crown fires.

Riparian and Aquatic

This alternative would be the same as Alternative 3.

Wildlife

Planning Area

Alternative 7, like Alternatives 3 and 6 would emphasize restoring terrestrial source habitats to provide for species needs across their historic distribution with a focus on biological diversity, by increasing the geographic extent of vegetation cover types and structural stages that have declined substantially from the historical to the current period. This alternative would provide direction to re-pattern the vegetation patches so they become consistent with natural disturbance regimes and with the landform, climate, and biological and physical characteristics of the ecosystem.

Representative components of naturally occurring vegetative types would be established across the planning area within the historic range of plant communities in sufficient size and frequency to serve as source habitats for species groups that are dependent upon those habitats. General wildlife emphasis by geographic area is displayed in Table 2-3, Wildlife Emphasis Areas, All Species Habitats).

Geographic Areas

Alternative 7 would establish specific direction for the following geographic areas (see this chapter, Common to Alternatives 2-7 section for a description of primary, secondary and general wildlife emphases). Wildlife habitat emphases by geographic area and specific to species of local importance can be found on Tables 2-4 – 2-8, Wildlife Emphasis Areas. This alternative would manage approximately 61 percent of the planning area with a primary emphasis, 8 percent with a secondary emphasis, and 31 percent with a general emphasis for wildlife (see Table 2-1).

Hydrology

Watershed Function

This alternative would be the same as Alternative 3.

Special Management Areas

Areas of Critical Environmental Concern (ACECs)

Alternative 7 would designate an expansion of the Peck's Milkvetch ACEC similar to that of Alternatives 5 and 6 except that the boundary would exclude a portion near the Cline Buttes Cinder Pit to accommodate the possibility of other land uses in this area. After the expansion, this ACEC would encompass an area of 14,227 acres. Objectives, guidelines and probable actions for this ACEC have been discussed under Alternatives 5 and 6. For Alternative 7, the Public Health and Safety guidelines for the Peck's Milkvetch ACEC would not restrict firearm discharge.

Acres designated as ACEC (existing and new) under Alternative 7 total 30,164.

Caves

Pictograph Cave would be closed seasonally (October 15 – May 1) for bat hibernacula and other resource values. The cave would be closed to the installation of bolted climbing routes. All existing bolts and climbing hardware would be removed and the cave would be managed under Leave No Trace principles. The use and/or possession of chalk or visually apparent hand-drying agents would also be prohibited in Redmond Caves.

Land Uses

Livestock Grazing

In this alternative the BLM would use a formula to estimate potential for conflict and demand to help identify where problems are likely to occur (for additional details of how this formula works see Common to 2-7 section in this chapter, and Chapter 4 livestock grazing assumptions). This formula is changed somewhat from alternatives 2-6; most notably, an ecological conflict factor is added, and allotments would not be placed in “closed” or Reserve Forage Allotment (RFA) status in most cases, unless the grazing permittee voluntarily relinquishes his or her permit. In this alternative, livestock grazing would be modified as directed in Table 2-27 when thresholds of conflict and demand are exceeded. Appendix G shows which allotments would be affected. When conflicts are below the thresholds described above, they would be solved (in all alternatives) on a case-by-case basis by modifying livestock grazing, recreational use, fences, roads, and/or other uses, activities or developments as needed to reduce conflicts.

Some allotments would be placed in RFA status. These allotments would not be allocated to a specific grazing operator. The BLM would allow temporary, non-renewable use to federal permit holders when there is a demonstrated need to rest the permittee’s allotment. “Need” for rest would include but not be limited to the following reasons: Prior to prescribed fire or necessary fence construction, or during/after rehabilitation projects, wildland fire or prescribed fire, drought, flood, insect damage, or disease. Use would meet goals described for area in RMP and, if applicable, in AMP.

Grazing operators who have permits for allotments that fall into “IPR close,” “IPR RFA,” “IPR close or RFA,” or “IPR open or RFA” status are under no obligation to relinquish their permits, and they are still able to transfer their permits to other qualified applicants.

Table 2-27 Grazing Matrix

		SOCIAL & ECOLOGICAL RATING								
		Low Ecological			Moderate Ecological			High Ecological		
		Low Social	Moderate Social	High Social	Low Social	Moderate Social	High Social	Low Social	Moderate Social	High Social
DEMAND RATING	Low Demand	IPR ¹ , Close or create RFA ²	IPR, Close or create RFA	IPR, Close or create RFA	IPR, Close or create RFA	IPR, Close	IPR, Close	IPR, Close	Close ³	Close
	Moderate Demand	Open	Open	IPR, create RFA	Open	IPR, Close or create RFA	IPR, Close	IPR, Close or create RFA	IPR, Close	IPR, Close
	High Demand	Open	Open	IPR, Open or create RFA	Open	IPR, Open or Create RFA	IPR, create RFA	IPR, Open or create RFA	IPR, create RFA	IPR, Close or create RFA

¹ IPR = if permit is relinquished

² RFA = Reserve Forage Allotment

³ Close = Discontinue livestock grazing for the life of the plan. BLM would provide two years notice of cancellation unless waived by permittee.

Minerals

This alternative would be the same as Alternative 6 with respect to mineral material site conflicts with recreation and wildlife habitat and would be the same as Alternative 2 with respect to conflicts with residents. In Alternative 7, approximately 349,199 acres would be available for mineral material sales. Mineral material sites would not be developed within 1/8 mile of residentially zoned areas. In addition, roads under BLM jurisdiction that feed into residentially zoned areas could be used for mining related traffic only if alternate routes are not available. Mineral material sites would not be developed within 1/8 mile of designated recreation sites in “urban” areas, or within 1/2 mile of designated recreation sites in “rural” areas. Seasonal restrictions on all mineral operations would apply to 66,746 acres and surface occupancy for fluid mineral leasing would not be allowed on 51,414 acres (see FEIS Map 8, Minerals Alternative 7). The Prineville Reservoir Cinder Pit would be managed as in Alternative 3.

Military Uses

This alternative allows for addition of new training lands in order to reduce concentration of military training on existing lands. Alternative 7 also promotes the restoration of the area by making additional lands available for permanent and temporary use.

Military use would be allowed in those areas identified for Alternative 7 on FEIS Map 6. The core training area under this alternative is approximately 27,934 acres.

The designated core training area would be south of O’Neil Highway, crossing Highway 126 and Powell Buttes Highway. It would also be south of Roberts Field and Deschutes County Fairgrounds. From north to south, the permitted area would remain east of the North Unit Canal, except for the area south of the Airport and north of Pronghorn resort. It would be north of BLM road 6589-B. The permitted area would be west of the private land ownership in the rural community of Powell Buttes.

There would be two designated extended training areas:

- **Area 2** - Five miles south of Prineville Airport to five miles north of the Millican Road/Reservoir Road Intersection (Four Corners) (about 7,030 acres). Area 2 would be open to dismounted soldiers and wheeled vehicles off road. Tracked vehicles limited to designated roads.
- **Area 3** - Five miles north of the Millican Road/Reservoir Road Intersection to that intersection (about 10,178 acres). Area 3 would have vehicles restricted to designated roads only. Dismounted soldiers permitted off road.

Both extended training areas would be closed from December 1 to May 1 for Pronghorn Winter Range; however, an exception may be utilized between April 15 and May 1. A waiver may be granted for operations between April 15 and May 1 subject to annual conditions and applicable guidelines. Area 1 (Steamboat Rock), which was identified in Alternative 6, was dropped as an extended training area because the rocky and fragmented nature of the area made it unsuitable for the types of training uses needed by OMD.

Recreation

The Preferred Alternative generally emphasizes recreation use that is managed for lower conflicts with wildlife in the areas away from population centers. The central portions of the planning area closest to Bend and Redmond often have recreation management goals that allow for higher levels of use and thus conflicts between recreational users and with adjacent landowners, as well as conflicts with wildlife management.

Alternative 7 differs from Alternative 6 by providing winter OHV trail riding opportunities in the North Millican area, albeit at a greatly reduced trail system compared to current trails available outside of the winter closure period. Like Alternatives 5 and 6, this alternative provides a relatively high mixture of different recreation opportunities and varying management strategies/intensities. Alternative 7 closes the highest percentage of the planning area to motorized use year-round (23 percent) of any alternative.

As compared to Alternative 6, a slightly smaller portion (37 percent) of the planning area is still managed for multiple uses, primarily on shared roads and trails (Millican Valley and Bend/Redmond areas). The reduction is a result of the Mayfield block's management changing to a roads only emphasis. Alternatives 6 and 7 provide about the same amount of lands managed for motorized use on roads only, while providing non-motorized trail opportunities. These areas would include the Northwest (Squaw Creek), and Skeleton Fire areas; and the area south of Prineville Reservoir. While most of these areas would be managed for non-motorized trail use, with the exception of the Badlands, these areas are relatively small and would not allow very lengthy trail systems for mountain bikes or horses.

This alternative proposes one of the most intensive management strategies for Cline Buttes, providing separate trails and/or separate areas for motorized and non-motorized trail users. Motorized use is concentrated in the middle and north portion of the Cline Buttes block, and would likely result in increased conflicts between recreational visitors and private landowners. Like many other alternatives, the Steamboat Rock management strategy is also extremely management intensive. Relatively few opportunities exist for motorized trail use surrounding a broad area around Prineville Reservoir, although a developed OHV area and a short loop trail system could be located within the "Roads Only" or "Non-motorized recreation emphasis" areas located north of Prineville Reservoir.

Alternative 7 represents a shift in management emphasis for the La Pine area, changing from the present management of an Open designation to a more intensive management strategy that includes area with designated roads and trails, areas with motorized use on designated roads only (see FEIS Maps 3).

Group Use/Special Recreation Permits

Activities outside of the guidelines contained in the PRMP for group and commercial use may be permitted based on additional NEPA analysis and BLM's SRP permit process.

Commercial Use

New Special Recreation Permits for non-foot traffic, trail dependent annual use (e.g., guided horseback rides, llama pack trips, mountain bike rides, etc.) would only be issued for designated trails or routes.

For hiking/foot traffic use, the BLM would emphasize authorizing commercial annual use on designated trails, then consider non-designated routes (in areas where no trail systems have been designated) through the Special Recreation Permit process if these routes are mapped and do not present resource concerns or social concerns. In areas where a designated trail system is implemented after the FEIS/PRMP ROD, trail dependent commercial use (including hiking) would be managed on this system in order to avoid creation of additional routes. Trail dependent refers to uses which the BLM determines that recreation and resource management issues require the use of a specific trail.

Organized Group Use

SRPs would be required for all organized group activities involving greater than 50 participants, unless a smaller group size threshold is identified in this plan (e.g., caves or other Special Management Areas). If the BLM determines that use levels in an area is likely to exceed the capacity of facilities a reservation system may be developed to meet growing demands for group uses such as group camping, day use for special events, etc., without exceeding the capacity of existing facilities.

Steelhead Falls WSA

Organized group and commercial use for the Steelhead Falls area would have the following restrictions:

- No organized group use on holiday weekends
- 1 group/day maximum
- 12 people/group maximum
- 6 cars/group maximum
- In the Steelhead Falls Area - travel limited to hiking.
- In the Foley Waters Area - travel limited to hiking or equestrian use.

Badlands WSA

Organized group use in the Badlands would have the following restrictions:

- 20 people/group maximum
- Group parking must occur outside the WSA boundary, and/or groups utilizing Milepost 16, County Line Road, or Obernolte Road trailheads would park outside the trailhead parking areas.

Horse Ridge

Organized group use in the Horse Ridge area would have the following restrictions:

- SRPs would be required for all organized group activities involving greater than 12 participants.
- Trail dependant special recreation events (trail rides, races, etc.) would be allowed on designated roads and trails. A maximum of two events (motorized or non-motorized) could be held per month, with events up to two days long allowed. Each permitted event would be separated by at least 12 days with no scheduled events.

Geographic Areas

Badlands WSA

Under The Preferred Alternative, the Badlands WSA would be managed for primitive, non-motorized recreation. The area would be Closed to the use of OHVs and motor vehicles, except for administrative use. Designated parking areas and trailhead improvements would be provided at major entry points (this includes travel management and trailhead improvements outside the WSA, including in the Mayfield area and in the North Millican area at the base of Dry Canyon).

The existing inventoried system of routes that connect to the following trailheads (Obernolte, Route 5, Milepost 16, and Route 8) would be retained. A non-motorized trail entrance at the existing inventoried route at the eastern boundary of the Badlands would be provided. For direction on parking/trailhead improvements, see plan guidance for the Mayfield and North Millican areas.

Bend/Redmond

The area would be Limited to designated roads and trails except the area west of the North Unit Main Canal located north and immediately south of State Highway 126 and

the area west of Powell Butte Highway and South of McGrath Road (CT2-7) would be Closed to motorized use.

The closure is because of the small size of the parcel and the separation of the parcel by the North Unit Canal from the remainder of the area, proximity to Redmond, and repeated problems with dumping and resource damage,

A multi-use trail system would be developed in the Bend-Redmond block. The trail system would be developed to create a system that could function with portions closed if needed to minimize conflicts with OMD training exercises. The road and trail system goal for the main block would be limited to a range of approximately 3.0 to 5.0 miles per square mile.

Recreation facility and transportation management, including R&PP decisions should be done in a manner that does not impair the future use of the North Unit Canal corridor as a regional trail opportunity.

Cline Buttes

The following areas are designated as Limited to designated roads and trails, open year round:

- The Cline Buttes block west of Cline Falls Highway, east of Fryrear Road, and north of State Highway 126 (including the Tumalo Canals ACEC).
- The Cline Buttes block north of State Highway 126.
- The following area would be designated as Closed to motor vehicles:
- The Cline Buttes block east of Cline Falls Highway (except for designated entry roads to parking areas and river access points)

The Cline Buttes area would be managed for multiple recreation use, with some areas being designated specifically for non-motorized trail development, while other areas would have multiple use trails.

The Cline Buttes block would be managed with an emphasis on multi-use trails in the center and north portions of the area. The dry canyon area along Fryrear Road and the area between Barr Road and Cline Falls Highway would be managed to emphasize non-motorized trail use. The Maston Allotment area east of Cline Falls Highway would be managed exclusively for non-motorized use. Like motorized users, Equestrians and mountain bikes would be limited to a designated trail system.

Roads would be retained or developed in the Cline Buttes block to the extent necessary to provide for needed administrative access and create a reasonable and identifiable loop system for public use, particularly in the area between Barr Road and Fryrear Road. Only the minimum number of roads needed for administrative access would be retained in the Maston Allotment. All other roads in this area would be either managed as designated non-motorized trails or closed and rehabilitated. Trail development in the higher elevation areas of Cline Buttes would be oriented toward providing non-motorized trails for hiking, mountain biking and equestrian use, with an emphasis on providing a loop system encircling the buttes. The central and northern portions (i.e., west of Barr Road and the area north of State Highway 126) of Cline Buttes would contain multi-use trails. However, the area east of Barr Road and immediately south of State Highway 126 would also be considered for shared use trails, as well as portions of the Tumalo Canals outside the Tumalo Canals ACEC and the Closed area located east of Cline Falls Highway. Trails would be located to minimize conflicts with adjacent landowners to the extent feasible.

For motorized trails, the trail system would be developed to:

- provide year-round opportunities
- provide riding opportunities in a variety of terrain

- limit the number of trailheads to a manageable number
- provide play area opportunities
- separate OHV use from other non-motorized trails to the extent feasible
- provide separate loops and a variety of choices that help to disperse users, given the relatively small acreage of the trail system
- allow motorized trail designation within or along the Tumalo Canals outside the ACEC and areas designated as Closed

For non-motorized trails, the trail system would be developed to:

- provide year-round opportunities
- clearly differentiate between motorized and non-motorized trails
- provide opportunities for all motorized users, but allow separation of uses (e.g., horses and mountain bikes) where appropriate)
- provide a loop trail around Cline Buttes
- provide a variety of trail difficulties, particularly for hiking and mountain biking
- provide trail connections between the area east of Cline Falls Highway and the areas west of Cline Falls Highway and Barr Road
- provide separate parking/trailhead areas from motorized users where possible
- provide managed and maintained trail access to public portions of the Middle Deschutes

This alternative would manage equestrian use on a designated trail system. Within the geographic subdivision, priority would be given to establishing a designated trail system within the Maston Allotment and the dry canyon complex in the northwest portion of Cline Buttes. This alternative would also provide designated trail opportunities for mountain biking. Emphasis would be on providing designated trail opportunities in the higher elevation portions of Cline Buttes, provided legal access exists and trespass would be minimized. Designated access points, parking areas and trailheads would be identified to support the non-motorized trail system, and the number of access points would be limited through trail layout and rehabilitation efforts.

Horse Ridge

Under Alternative 7, the Skeleton Fire area would be managed for motorized use on a few main roads, much like it is today. One road segment closed after the Skeleton Fire may be reopened (or an alternate route provided) to create a road loop accessible from both the Gosney Road and Old Highway 20 access points. A designated trails system would be provided for non-motorized use in the same area. The travel management goal for this area would be to separate designated roads (motorized use) from designated trails (non-motorized use) to the maximum extent feasible, avoiding intersections between the two different travel routes and locations where trails parallel roads.

Horse Ridge and the area between State Highway 20 and the old Highway would be managed for exclusive non-motorized trail use. The road and trail system goal for the area would be to provide year-round non-motorized trail systems that offer hiking, mountain biking and equestrian use on primarily shared trails, although provisions for separating uses would be considered at an area management plan or site specific analysis level.

In addition to those areas that would be Closed in Common to Alternatives 2 - 7 (area around Conestoga Hills, Rickard Road area, and Horse Ridge ACEC/RNA) the following travel designations would apply to the Horse Ridge area:

- The Skeleton Fire area would be designated as Limited to designated roads.
- Horse Ridge area would be designated as Closed to motorized vehicles. This closure extends northwest into the area between State Highway 20 and the old highway 20 alignment (T18S, R14E, Sec. 30, 31,32; T19S, R14E, Sec. 5, 4, 3, 10; T18S, R13E, Sec. 25).

La Pine

The majority of the La Pine area would be managed for motorized use on designated roads only. The southern third of the La Pine area would be managed for motorized use on designated roads only; however trail links could be provided if needed to connect to trail systems on public lands adjacent to BLM. The middle portion of the La Pine area east of State Highway 97 would be managed for motorized use on designated roads and trails year-round. This area would encompass the Rosland OHV Play area, and provide more opportunities for designated trails and links to roads or potential future trails on the Deschutes National Forest. The northern portion of the La Pine area would be managed for motorized use on designated roads only, with additional non-motorized trails being developed, particularly if opportunities are available to link BLM trails with trails at La Pine State Park.

Mayfield

The Mayfield area would be managed to provide separate geographic areas for motorized and non-motorized use, with the airport allotment and most of the area south of Alfalfa Market Road being managed exclusively for non-motorized trail use, and the area to the north of Alfalfa Market Road being managed for motorized use on a designated road system. Under this alternative, nearby motorized trail use opportunities would be available in the Millican Valley area and in the Bend / Redmond block.

The 19,399 acre area north of Alfalfa Market Road would be managed to provide a road system that can be used by both motorized and non-motorized recreational visitors as well as by permittees. The road system would be designed to provide loops from designated access points. Rerouting of the existing road away from the edge of Mayfield Pond would be a priority. Designated roads would be located away from bordering subdivisions to limit unauthorized access into the area and creation of new travel routes. The travel management concept for the area would be to separate roads from non-motorized trails to the maximum extent feasible, avoiding intersections between the two different travel routes and locations where trails parallel roads. Non-motorized trail connections would be considered at the surrounding subdivisions. Roads not designated would be rehabilitated. Day use improvements such as picnic tables, group use areas, etc. may be considered, and other access points would be provided to serve surrounding residential access, but would be minor access gates, without improved parking.

The area south of Alfalfa Market Road, north and west of Dodds Road would be closed to motor vehicles, and the existing roads would be reconfigured into a non-motorized trail system. Designated trailheads would be created to access this area. The major trailhead parking area would likely be located off Alfalfa Market Road, however, secondary trailheads may be considered to provide access for local residents. Trail system goals would be to provide several different length loops for hiking, running, equestrian and mountain bike use. Day use improvements such as picnic tables, group use areas, etc. may be considered, and other access points would be provided to serve surrounding residential access, but would be minor access gates, without improved parking.

The travel management emphasis for the area east of Dodds Road and west of the Badlands WSA would be to provide public access to Reynolds Pond, Alfalfa Pond, and the Route 5 entrance of the Badlands WSA. Roads would be retained to meet these access needs, while minimizing conflicts with adjacent landowners. A road link to Badlands WSA (Route 5) entrance would be retained, and a designated parking / trailhead area would be developed either at this trailhead, at Reynolds Pond, or other suitable location. An entry road and parking area would be relocated further away from Alfalfa Pond, to minimize conflicts with adjacent residents.

Millican Plateau

This alternative would manage the Millican Plateau area for year-round OHV use on a designated trail system. There would be a small, roads only buffer area around the Powell Butte RNA that would be limited to designated roads only. The majority of the geographic area would be managed for year-round use on designated road and trails. Development of OHV play areas and technical four-wheel drive opportunities would also be considered for this area. The northern tip of the Millican Plateau area is closed to motor vehicles, in response to chronic dumping and vandalism problems between the BLM boundary and the powerline crossing at Millican/West Butte Road (see FEIS Map 3). The area west of and adjacent to the Crooked River Canyon would be closed to motorized use, with the exception of a single trail loop that would access a river canyon viewpoint.

There would be an increase in the amount of area available for future trail designations by expanding the OHV trail system to incorporate areas to the west, east, and north of the existing designated OHV area. The goal of this expansion would be to improve management of areas currently limited to “existing” roads and trails by designating specific trail systems, to increase the diversity of OHV opportunities by creating new trails and play areas, and to provide trail opportunities to help balance the seasonal and trail density restrictions in North Millican and South Millican areas. The road and trail system densities for the area would be limited to a range of approximately 2.5 miles to 4.0 miles per square mile.

The trail system for the Millican Plateau would be managed to include:

- An increased density and mileage of trails compared to the North and South Millican Areas to provide dispersal of users;
- A range of opportunities, including trails, play areas, and technical four-wheel drive opportunities;
- Year-round trail connections to the North Millican Area;
- Trail system loops that provide some topography and challenging terrain;
- Trail system loops that allow for special events and races;
- Development of grade separated crossings of Millican/West Butte Road and Reservoir/Alfalfa Market Road
- Staging areas to disperse users and provide OHV area access from Prineville.
- Increased development of staging areas, with provision of toilets or camping areas as needed.

This alternative would designate an area west of and adjacent to the Crooked River as Closed to motor vehicles. The area immediately surrounding the Powell Butte RNA would be limited to designated roads, in order to maintain a separation between OHV use and the RNA. The northern tip of Millican Plateau would be closed to motor vehicles (see FEIS Map 3) except for providing some trail access to a viewpoint.

The interim road and trail system in Millican Plateau would consist of the existing road and trail system implemented in the Millican Valley OHV Area Plan, additional roads currently open to street legal vehicles, and a designated road and trail network based on existing roads and trails in the expanded portion of the Millican Plateau area (i.e., the area outside of the current OHV area boundary).

North Millican

The Preferred Alternative would manage most of the area for shared use on a designated trail system. The dry river canyon along State Highway 20 would not have any motorized trails designated in it. The area west of and adjacent to State Highway 27 would not be the focus of designated motorized trails; however motorized trail links may be provided in this area if a designated road or trail network is developed on

BLM-administered lands to the east of State Highway 27. The designated trail system in North Millican would be reduced in mileage and density over current conditions to allow for year-round, and especially winter, use. To reach a relatively low trail density, the travel management priority for the area would be given to trails, and all roads not needed for administrative access may be closed and rehabilitated or converted to trails. To reduce habitat fragmentation, the trail system layout would be designed to place trails in existing road or ROW corridors to the extent feasible. The trail system layout would also emphasize retention of large, un-fragmented habitat blocks (in a range of 1,000 to 2,500 acres or greater) throughout the area. As in all the other action alternatives, the trail system in the area would be revised to maintain a functional system on both sides of Millican/West Butte Road. The number of trail crossings of Millican/West Butte Road would be reduced, and frontage trails may be provided to collect trail use and lead it to a smaller number of grade separated crossings. Isolated parcels located within and east of Juniper Acres subdivision are either closed to motorized use or limited to designated roads only (see FEIS Map 3, Recreation and Travel Management Designations – Alternative 7). Areas or portions of the trail system may be closed during the winter; however, the trail system goals for the North Millican area would include:

- A workable winter trail system that in combination with Millican Plateau, provides high quality, diverse riding conditions for local and out-of-area riders over a variety of difficulties and terrain;
- A trail system designed to encourage winding, more challenging trails that increase the hours of riding opportunity per mile of trail corridor;
- A range of opportunities, including trails, play areas, and technical four-wheel drive opportunities;
- Year-round trail connections to the Millican Plateau, to provide for dispersal of users and longer riding opportunities;
- Multiple staging areas to disperse users throughout a less dense trail system;
- Provision of toilets or camping areas as needed;
- Maintain connections to the South Millican area;
- Development of grade separated trail crossings of Millican/West Butte Road;
- Providing a range of settings that provide quality riding conditions during the best season (winter) by providing some trails in areas of steeper topography that offer challenges and provide scenic qualities.

The interim road and trail system in North Millican would include the existing designated roads and trails that comprise the OHV system (with revisions made to the extent necessary to provide for safe trail crossing of the newly paved Millican/West Butte Road) and additional roads currently open to street legal vehicles. The designated OHV system would continue to be subject to the existing seasonal closure that currently applies (OHV system closed from December 1 through April 30).

The area would be managed as Limited to designated roads and trails, open year round, except for an area along State Highway 27 that would be managed as Limited to designated roads only (see FEIS Map 3); however, motorized trail links may be provided in this area to connect to any future designated road or trail systems on BLM-administered lands to the east of State Highway 27. The Dry Canyon area in the northwest corner of North Millican area would be managed for equestrian, hiking, and mountain bicycling use on designated trails. Additional non-motorized trails may be considered to provide a loop trail incorporating Dry Canyon and the area to the north of Dry Canyon. A designated trail link would be provided from Dry Canyon to the Route 8 entrance to the Badlands WSA.

Northwest

The area would be managed with an emphasis on development of non-motorized, designated trails that provide connectivity to a regional trail system, links to Sisters

Community trails, and links to non-motorized trail systems on Crooked River National Grasslands (CRNG) to the north. Motorized use would be limited to designated roads only in the main block (i.e., between Squaw Creek and McKenzie Canyon). Motorized use would be prohibited in the isolated parcels west of Squaw Creek (except on a designated entry road into the Sisters Bouldering Area). A seasonal restriction on motorized use would be in place in the main block, consistent with adjacent policy on the CRNG; however, this area remains open year-round for non-motorized use. Non-motorized trails and designated trailheads to serve them are provided. The Sisters Bouldering Area would be managed specifically for climbing use, and would be identifiable as BLM-administered land.

The existing road on BLM-administered land that connects Holmes Road to Forest Road 6360 would be retained as a BLM system road. Other roads would be retained or developed in the main block only to the extent necessary to create or access parking areas, trailheads or developed sites, or to serve existing administrative use. The trail system goals for the area would be to provide connections to regional trails, to provide a non-motorized trail link from the Sisters area to Alder Springs trailhead access road, and to provide year-round non-motorized trail opportunities. Designated trails would be developed to serve as a trail link between the southwest end of the main block and Forest Road 6360. One or two additional trail loops would be provided in the area, particularly if a separate trailhead is developed off Holmes Road.

Off highway motorized vehicle use would be managed to provide visitor satisfaction, protect natural resources, provide visitor safety, and minimize conflicts among various users and neighbors. Non-motorized recreation opportunities would also be provided to offer visitor satisfaction, protect natural resources, and minimize conflicts among users and neighbors. Designated access points, which include entry points, and parking areas, trailheads, and staging areas would be added to enhance visitor experience, protect resources, and minimize conflicts with neighboring land owners.

Motorized travel in main block would be limited to designated roads. All BLM roads in this area (except access roads to non-motorized trailheads or developed sites) would be closed to motorized use seasonally, from December 1 to March 31. Isolated parcels west of Squaw Creek would be Closed to motorized travel, except for Sisters Bouldering Area, which would be limited to designated roads only, year-round.

Prineville

Under the Preferred Alternative, the many small isolated tracts of BLM-administered land north of Prineville would be closed to motorized vehicle use. This also includes one of the larger tracts, the 640-acre parcel located adjacent to Ochoco Reservoir. BLM public lands located south of Prineville and north of the Prineville Reservoir geographic area are managed primarily for motorized use on designated roads year-round. However, this area would be considered for development of limited OHV opportunities such as a play area and associated trails to serve the local users (from the adjacent rural subdivisions). The goals of this development would be to provide a definable and manageable area for OHV use that is outside the areas where motorized use is restricted seasonally or year-round in the Preferred Alternative. The 640-acre parcel bisected by Juniper Canyon Road is designated Closed to motor vehicles to address dumping and erosion problems at the site.

Prineville Reservoir

The northeastern portion of the area (the Sanford Creek drainage) would be managed for relatively low motorized access, with designated roads only being open seasonally. The remainder of the area, including lands on either side of the Bear Creek arm of Prineville Reservoir, would be limited to designated roads only year-round. These BLM-

administered lands would have designated, non-motorized trails that link to BOR/State Park managed sites at Prineville Reservoir.

Designated roads and OHV use would be the same as Alternative 2. However, motorized travel would be Limited to designated roads south of Prineville Reservoir (Taylor Butte travel is limited under Common to Alternatives 2 - 7), except:

- Within the Sanford Creek area motorized travel would be Limited seasonally May 1 thru November 30.
- Area north of upper Portion of Prineville Reservoir is designated limited to designated roads and trails and motorized travel would be limited seasonally May 1 through November 30.
- Area between County Boat Ramp and Chimney Rock Trail (i.e. the area north of Prineville Reservoir and immediately east of the Crooked River) would be Closed to motor vehicles.

Smith Rock

The entire block would be closed to motorized vehicles. Additional non-motorized trails may be created both to solve resource issues at climbers' trails and to meet demand for hiking, mountain biking, and equestrian trail opportunities.

Trail development would be coordinated with SRSP and CRNG. Trails would be designed and located to protect resources and scenic values.

South Millican

South Millican would remain as an OHV use area, but would retain the existing seasonal closure (area closed to motorized use from December 1 through July 31). Motorized use would be Limited to designated roads and trails, and the existing trail system would be retained. No new trail connections would be provided between the motorized trail system in South Millican and trails in the adjacent Deschutes National Forest.

Trail dependent special recreation events (i.e., trail rides, races, etc.) would generally not be allowed in the South Millican area, except for the minimum use necessary to complete loops on the non-motorized trail system in or around Horse Ridge.

The interim road and trail system in South Millican would include the existing designated roads and trails that comprise the OHV system (with revisions made to the extent necessary to provide for safe trail crossing of the newly paved Millican/West Butte Road) and additional roads currently open to street legal vehicles.

Steamboat Rock

The majority of the main block of public land in the Steamboat Rock area (i.e., BLM-administered lands bisected by Lower Bridge Road and located between Tetherow Crossing subdivision and Crooked River Ranch) would be managed for both motorized and non-motorized use on a shared trail system. The river parcels adjacent to Crooked River Ranch would continue to be managed to emphasize non-motorized use. Isolated parcels northwest of Redmond are managed exclusively for non-motorized use, with access improvements to allow access to the middle Deschutes River while minimizing conflicts with landowners.

While the main block between Tetherow Crossing subdivision and Crooked River Ranch would be open to OHV (Class I and III, i.e., motorcycles and quads), it would be closed to full size vehicles in an effort to reduce conflicts between adjacent landowners and public

land visitors and to reduce illegal dumping prevalent in the area. The trail system goals for the area would include a reduction in the number of access points, and provision of designated trailheads. Any access points needed solely for administrative access (e.g., at powerline corridors) may be gated and not available as public access points. New roads or trails would be created as needed to link existing roads back to common access points or trailheads. Trails would be routed to avoid private lands and minimize conflicts with adjacent landowners. A separate trail system for non-motorized use would be developed along the Deschutes River in the portion of the main block that is designated Closed to motor vehicles.

Main block managed as Limited to designated roads and trails only, and limited to Class I and III OHVs only (no full size vehicles). The Deschutes River corridor in the main block is designated as Closed to motor vehicles. The boundaries of the closure area are Lower Bridge Road to the north, the main unimproved road that parallels the river to the east, and the BLM boundary with private land to the south and west. With the exception of the BPA powerline parcel, all isolated BLM parcels northwest of Redmond are designated as Closed to motor vehicles (see Common to 2 - 7 direction). Adjacent to Crooked River Ranch, the Deschutes River corridor is designated Closed and the Crooked River corridor is limited to designated roads only.

The Tumalo Block would be closed to motorized use year-round, and the recreation management emphasis would be to provide non-motorized opportunities (hiking, mountain biking, and equestrian use) on designated trails year-round. Designated and managed parking areas/trailheads would be provided to serve the trail system. A designated, non-motorized trail system would be developed and signed in both larger parcels north and south of Tumalo Reservoir. In order to control motor vehicle access into these areas, the boundaries may be fenced.

Roads would be retained or developed in the Tumalo block only to the extent necessary to create or access parking areas, trailheads or developed sites, or to serve existing administrative use. Roads not needed for administrative access may be closed and rehabilitated or modified to serve as trails. Designated trails would be developed to serve as links to Deschutes National Forest lands to the west, as well as to provide several smaller loops within BLM-administered lands. Roads would be retained or developed in the Tumalo block only to the extent necessary to create or access parking areas, trailheads or developed sites, or to serve administrative use. Roads not needed for administrative access may be closed and rehabilitated or modified to serve as trails. Designated trails would be developed that:

- Provide year-round opportunities
- Provide links to adjacent trail systems
- Provide a variety of loops that offer a diversity of trail experiences and serve to disperse users
- Take advantage of scenic and interpretive opportunities

Transportation and Utilities

Alternative 7 would consolidate transportation and utility systems with consideration for ecological and recreational values, while providing for regional transportation systems and meeting regional objectives. The road network and transportation/utility corridors would be designated as shown on FEIS Map 2. In addition, this alternative allocates a transportation/utility corridor adjacent to the Burlington Northern/Santa Fe railroad right-of-way approximately 1.2 mile wide south of Redmond, extending to Deschutes Junction. Alternative 7 identifies 61 percent of the planning area in a primary wildlife emphasis designation and 43 percent in either a non-motorized emphasis or non-motorized exclusive designation. The recreation designations may or may not be

included in the primary wildlife emphasis designation. Refer to the Recreation and Wildlife Emphasis maps for specific locations.

Land Ownership

This alternative has the same priorities for rural and urban lands as Alternative 6. This alternative prioritizes land actions in the urban areas, emphasizing connective corridors and blocking up large public parcels. It directly emphasizes wildlife and indirectly recreation, because most wildlife activities involving land ownership would correspond to activities involving recreation. The alternative does not prioritize recreation before wildlife. Community needs have been identified by each of the communities, and public lands designated to address those needs. An emphasis on management ease or land patterns would be coincidental with wildlife or recreation activities in the same location. Alternative 7 would designate the lands in FEIS Map 6 as Z-1 (approximately 323,931 acres) in the more urban areas to provide for wildlife and more intensive recreational uses, and retain lands in the more rural areas to provide for wildlife and moderate recreational uses. Blocks of public lands identified as Z-1 include Tumalo, Cline Buttes, Northwest, Bend/Redmond Core, Smith Rocks, Mayfield, Badlands, Horse Ridge, Reservoir West, Reservoir East, Southeast, and Highway. In La Pine, Z-1 lands would be north and east of Wickiup Junction. Other, smaller parcels of public land include Grizzly Mountain, Ochoco Reservoir, and in La Pine along the Little Deschutes River.

This alternative would also designate the lands in FEIS Map 6 as Z-2 (approximately 83,212 acres) as generally to retain. Isolated and fringe public parcels have also been identified as Z-2 to provide connectivity between larger blocks and eliminate trail and road entries onto private lands in the rural areas. Parcels are located between Tumalo and Cline Buttes, Northwest to Cline Buttes, Steamboat to Cline Buttes, Mayfield to Badlands and Reservoir West and Reservoir East to the Maury Mountains. Areas to block up include east and south of Juniper Acres, Horse Ridge, Cline Buttes, Bend/Redmond, Mayfield, and Reservoir West. The isolated parcels generally around Prineville would be used for blocking or connecting and of the locations above. The majority of the public lands in La Pine are Z-2, extending south from Wickiup Junction to the boundary of the project area. Parcels were not specifically selected to correspond with private parcels desired for acquisition.

This alternative would also designate the lands in FEIS Map 6 as Z-2 (approximately 62,753 acres) as generally to retain. Isolated and fringe public parcels have also been identified as Z-2 to provide connectivity between larger blocks and eliminate trail and road entries onto private lands in the rural areas. Parcels are located at Steamboat Rock, Mayfield to Badlands and Reservoir West and Reservoir East to the Maury Mountains. Areas to block up include east and south of Juniper Acres, Horse Ridge, Bend/Redmond, Mayfield, and Reservoir West. The isolated parcels generally around Prineville would be used for blocking or connecting and of the locations above. The majority of the public lands in La Pine are Z-2, extending south from Wickiup Junction to the boundary of the project area. Parcels were not specifically selected to correspond with private parcels desired for acquisition.

This alternative would designate the lands in FEIS Map 6 as Z-3 (approximately 15,186 acres) as disposal. Parcels suitable for disposal include eight in the Northwest, eight south of Steamboat Rock, three at Cline Buttes, one west of Redmond, two along Highway 97, eight around O'Neal, 15 north of Prineville, twelve north of Highway 380, nineteen between Prineville and Prineville Reservoir, three east of Prineville Reservoir, three in Alkali Flat, two southeast of Bend, four near Burgess Road in La Pine, and one at the intersection of Highway 97 with Highway 31. This alternative would designate the lands in FEIS Map 6 (approximately 3,612 acres) as Community Expansion (zoned CE). The public lands identified for community expansion near Redmond are located

south of Redmond Airport, and south of Redmond and east of Highway 97. Public lands identified for a park are east of Highway 97 between Redmond and Bend. Public lands identified for a park are east of Prineville, at Barnes Butte. Parcels selected public facilities and parks are between La Pine and Wickiup Junction.

Public Health and Safety

Alternative 7 firearm discharge management would close the most acreage to all firearm discharge of any alternative (3% of the planning area); including additional closures above Common to Alternatives 2 – 7 management in urban, high-use areas. However, Alternative 7 would close less acreage to firearm discharge unless legally hunting than Alternatives 3 and 5. This alternative would emphasize management in the Badlands area, Horse Ridge, Steamboat Rock, the Crooked River WSR, the Tumalo block, and parts of Cline Buttes (see Tables 2-28 and 2-29).

Table 2-28 Closed to all firearm discharge; Alternative 7, Preferred Alternative

Geographic Area	
Bend / Redmond	Southwest of McGrath Road including Wagon Roads ACEC, west of N. Unit Canal and north of Hwy. 126, west of N. Unit Canal and south of Hwy. 126 for approx. 1 mile
Cline Buttes	Tumalo Canal ACEC, 3 dry canyons west of Barr Road and south of Hwy. 126 (corresponds with areas where only non-motorized trails are allowed).
Horse Ridge	North of Rickard Road and south of Hwy. 20
Mayfield Pond	Airport allotment isolated parcel
North Millican	Dry river canyon east of Hwy. 20, immediately south of Badlands WSA
Prineville	Barnes Butte
Tumalo	1025-acre parcel south and east of Tumalo Reservoir

Table 2-29 Closed to firearm discharge unless legally hunting; Alternative 7, Preferred Alternative

Geographic Area	
Badlands	Entire Badlands Block except 1/2 mile around Badlands Rock from March 1 to August 31
Cline Buttes	Main block – All BLM-administered land south of Hwy. 126, and east of Barr Road except where a firearm discharge closure already exists
Horse Ridge	Between new and old Highway 20, Horse Ridge proper (approx. SE 2/5ths of the block)
La Pine	4 isolated parcels in southern section of block, near Little Deschutes River
Mayfield	Main block – south of Alfalfa Market Road
Millican Plateau	Contiguous and west of the Lower Crooked WSR, west side of Lower Crooked River north of WSR section, west of Millican Road for 2 miles south from northernmost point of peninsula
Prineville Reservoir	Contiguous and east of Lower Crooked WSR and contiguous and west of BOR/Prineville Reservoir
Steamboat Rock	All BLM-administered land south of Lower Bridge Road outside of the WSR corridor
Tumalo	Entire block except where a firearm discharge closure already exists

Alternatives Considered but not Analyzed in Detail

This section includes a brief description of why certain aspects of alternatives were considered, but not analyzed in detail.

Land Uses and Recreation

The range of alternatives examines seven different combinations of allocations and allowable uses on public lands such as livestock grazing, mineral sales, military use, and Off-Highway Vehicle use in various levels across the planning area. Alternatives that would have completely eliminated these uses from the entire planning area for the life of the plan were eliminated from detailed study. The underlying Purpose and Need of the Resource Management Plan and the efforts of the collaborative process established the scope of a reasonable range of alternatives. It is based on finding alternative ways to meet multiple interests and demands in some combination across the planning area in all alternatives, rather than to focus on ways of addressing the issues that would not meet some interests at all in specific alternatives.

Rockhounding

This plan identified the need for daily and annual limits on recreational rock collection due to excessive personal and illegal commercial use. The following paragraphs list the approaches to limited rock collection that were eliminated from detailed analysis. Limiting the combined total of rocks, semi-precious gemstones, mineral specimens and common invertebrate fossils collected from public lands to the same limit as petrified wood (25 pounds per person per day plus one piece and not to exceed 250 pounds per year) was considered. This was eliminated from detailed consideration because a limit based on a combined total of many rock types is more restrictive than the same limit based on one rock type. A more restrictive limit is not needed because many rocks, semiprecious gemstones, and mineral specimens in the planning area are more abundant or under less demand than petrified wood.

Establishing daily collection limits based on individual rock types was considered but eliminated from detailed consideration on the basis of impracticability. It is impractical for rockhounders to have knowledge of every rock type they might collect. Moreover, rock identification is complicated by various rock subtypes with many different common names.

Continuing to follow the BLM Oregon/Washington State Office guidelines of 250 pounds per person per day was eliminated from consideration because there is no annual limit and up to 250 pounds of rock materials could be collected each day. This option would not significantly discourage illegal commercial activity or excessive personal use.

Public Health and Safety

Buffers

One tactic to manage firearm discharge that was considered but eliminated from detailed analysis incorporated the implementation of a 1/4 mile wide no-shooting buffer around all large blocks of BLM-administered land within the planning boundary. This approach would have required BLM to implement and enforce a firearm discharge closure hundreds of miles in length. Instead, the guidelines in PHS Objective 4 – Intergovernmental Cooperation, are being utilized. Objective 4 guidelines provide a

mechanism for adjacent landowners (including private landowners and public entities) to request no shooting buffers on adjacent BLM-administered lands. This approach was viewed as preferable because: (1) closures would be citizen-based, emphasizing public awareness, input, and debate, (2) closures would be geographically explicit, protecting as much firearm discharge opportunity as possible, (3) adjacent governments would be involved, improving communication and cooperation between agencies, and (4) the initial amount of area closed by BLM would be greatly reduced, thereby improving implementation.

BLM-Managed Shooting Ranges

One of the firearm discharge options discussed during Public Health and Safety Issue Team meetings included the idea of BLM-managed shooting ranges. While numerous ideas were explored, the general concept focused on turning existing gravel or cinder pits into designated shooting areas. These areas would be dispersed throughout the planning area. Local target shooting enthusiasts could then utilize a known area with an established backstop. In turn, other nearby recreationists would know exactly where target shooting would take place, allowing them to select an adjacent area for their visit. In moving to another area these non-shooters could reduce their chance of being struck by a bullet, reduce their fear associated with being struck by a bullet, and reduce conflicts associated with the sounds of concentrated target practice.

A BLM-managed shooting range option was considered but eliminated from detailed analysis for the following reasons:

1. As envisioned by most Public Health and Safety Issue Team members, BLM-administered shooting ranges would not require any active agency presence, including staff to supervise and educate users. From a liability standpoint, this approach is fundamentally unacceptable. Discharging a firearm is an inherently dangerous activity. At commercial shooting ranges users must sign waivers before shooting, and are given explicit instructions on what, how, and where to shoot. Commercial shooting ranges users are monitored by range employees, and users conducting themselves in an unruly manner are removed. However, the proposed BLM shooting ranges would have none of these safeguards.
2. The next logical approach would require BLM to staff its own managed shooting ranges. However, the BLM Prineville District does not presently, nor in the foreseeable future (e.g. the life of this Plan), have the resources to staff a developed shooting range. Even a more limited responsibility of simply open and closing gates (to restrict use to daylight hours) is presently beyond the District's capacity.
3. Even if BLM was willing and capable of staffing its own managed shooting ranges, a certain section of the shooting population would be unwilling to utilize this kind of facility. These citizens explicitly only enjoy an unmanaged environment, one in which they can shoot what, how and where they want. This opinion was expressed by some members of the Public Health and Safety Issue Team. These individuals commented that other shooters might be interested in using a managed shooting range, but they personally would not. User fees usually associated with managed shooting ranges were found to be an additional deterrent.
4. While the BLM cannot manage its own shooting ranges, the opportunity for other entities to construct and manage their own ranges, on BLM-administered land, through an R+PP lease, is possible and an explicit interest of management. Presently the COSSA facility on Highway 20 is partially serving the public shooting need, and the District is open to leasing additional entities BLM-administered land for the purpose of a managed shooting range.

5. Over time, areas of concentrated firearm discharge would develop high levels of metallic lead. Presently, controversy remains over the possible adverse environmental affects from the deposition of metallic lead on land or behind a backstop area. Historically the Environmental Protection Agency (EPA) has mandated Resource Conservation and Recovery Act (RCRA) action requiring the cleanup of some shooting ranges related to observed levels of lead. At a minimum the National Rifle Association (NRA) maintains the position that metallic lead constitutes a scrap metal, and should be reclaimed (collected) on a regular basis. While national BLM standards have not been adopted, at a minimum, metallic lead should be reclaimed, and more extensive cleanup may be mandated in the future. Presently Prineville BLM does not have the resources to conduct cleanups, nor are the existing mining pits suitable for reasonable lead recovery. The present and potential future difficulties associated with lead reclamation provide another reason why Prineville BLM-administered shooting ranges were considered but eliminated from detailed analysis.

Firearm closures restricting type of weapon

Another firearm discharge closure method considered but eliminated from detailed analysis would have restricted the type of weapon that could be utilized for hunting in a particular area. However, this is not the preferred approach in Central Oregon for three reasons. First, the firearm predominantly used for hunting within the planning area is a rifle, and is not easily substituted with another type of weapon (e.g. hunting deer with a shotgun). BLM is sensitive to traditional uses of public land and seeks to allow those uses to continue without further regulation whenever possible. Second, from a recreation opportunity perspective, closing some areas to all firearm discharge is preferable to closing areas to a particular type of weapon. This approach provides visitors who are highly sensitive to firearm discharge a place to recreate. Finally, restricting by the type of weapon makes education difficult for both hunters and non-hunters alike. Proponents argue the firearm-specific approach has been used extensively on the East Coast, especially in the New England. However there is relatively little public land on the East Coast. Most hunting is conducted on private land, and much of the public land is closed to all firearm discharge year round. Areas that do allow hunting generally have easily identifiable boundaries, with established access points, and visitors accessing the area can be educated relatively easily about firearm regulations.

In contrast, the Central Oregon region is dominated by public land (both BLM and USFS), and most of it is presently open to all firearm discharge. Wide open spaces and relatively sparse vegetation makes the rifle the traditional hunting weapon of choice. Additionally, Central Oregon's human population is expected to double over the life of this Plan, and many of the new immigrants are, and will continue to, come from urban areas. These visitors are relatively unaccustomed to firearm discharge. From a recreation opportunity perspective, these visitors are expected to prefer areas without any firearm discharge rather than areas restricted by type of firearm. Finally, weapon-specific restrictions increase the overall complexity of restrictions on BLM-administered land, requiring an increased knowledge base of all users. The Prineville District prefers to keep the regulations as simple as possible. In the future, as the number of subdivisions outside city boundaries increase, and as additional facilities are developed on BLM-administered land, and as the public becomes better educated about existing regulations, a weapons-specific approach may become more suitable for Central Oregon. At this time it is preferable to limit an area to all firearm discharge rather than by type of firearm.

Chapter 3

Affected Environment



Introduction

Central Oregon is a land of rapidly growing communities amidst vast tracts of BLM-administered lands and privately owned agricultural and range lands. Except for the population centers, the land is sparsely settled and largely undeveloped. Because the Cascade and Ochoco Mountains are cold and snowy and the high desert between the communities and to the east and southeast of the developed areas are arid and rocky, development of the region has been limited. The recent rapid growth of the developed communities is partly a function of the attractive recreational opportunities available on Forest Service and BLM-administered lands, coupled with the improvements in transportation and communication that have reduced the isolation of Central Oregon from the rest of the world. This chapter describes the current situation within the planning area, starting with the history and social setting, and the physical and geographical setting. The remainder of the description of the affected environment focuses on the elements of the environment that are the foundation of the issues addressed by the alternatives and analyzed in the environmental consequences. These elements are discussed in the same sequence as established in the issue statements in Chapter 1 and carried through each of Chapters 2, 3, and 4.

Physical Setting

Climate

The climate within the planning area is controlled primarily by air masses that move eastward across Western Oregon and into Central Oregon. What happens to these air masses in Central Oregon is largely the function of two geographical variables. The first is elevation. As elevation decreases from the southern part of the planning area near La Pine to the northern part of the area near Madras, average temperature increases while precipitation decreases. The second is the rain shadow effect of the Cascade Range, which diminishes precipitation rates moving west to east, with the western part of the planning area averaging 15 inches per year. The eastern part of the planning area averages 10 inches per year. The La Pine area averages 15-20 inches per year (Taylor, 1993). Most of the precipitation occurs as snow during winter months and as rain during thunderstorms during summer months. The summer thunderstorms are often high intensity and relatively short in duration. The amount and duration of snowfall in winter is variable, but the southern part of the area receives the highest amounts for the longest duration (USDA, NRCS, 1998). Average high air temperatures generally range in the low 40s in the winter to mid-80s in the summer, with extremes as high as 107°F. Average low temperatures range in the low 20s in the winter to high 40s in the summer, with the coldest temperatures plummeting to -34°F in the winter.

Air Quality

Most of the planning area has relatively high air quality. A steady trend toward improved visibility has been observed in the Bend and Redmond areas in the past 10 years, largely attributed to the phasing-out of older wood stoves and the use of cleaner methods for heating homes.

Some wilderness areas have been designated Class I Areas for air quality management. No class I areas lie within the planning area, although the Mt. Jefferson, Mt. Washington, and the Three Sisters Wildernesses all lie 15 to 30 miles to the west, and the Strawberry Mountain Wilderness is 70 miles to the east.

Particulate emissions are regulated for some counties in Oregon. No regulation exists for Deschutes, Jefferson, or Crook Counties. Klamath and Lake Counties are partial non-attainment areas for PM-10, which is airborne particulate material in smoke that is less than 10 microns in diameter. The portions of Klamath and Lake Counties with this designation are the populated areas around Klamath Falls and Lakeview, some 80 miles south of the planning area.

Physiography and Drainage

The planning area includes parts of the two major ecologically based land provinces—the Mazama, and the John Day. The physical characteristics of the different provinces of Oregon are based on geography, geology, and soil (Anderson *et al.*, 1998). The planning area resides in the Deschutes Basin, primarily within the Lower Crooked, Upper Deschutes, and Little Deschutes Sub-basins (See Map S-14: Sub-basins, Watersheds, and Sub-Watersheds; and the Aquatic/Riparian/Water Quantity and Quality for more discussion on hydrologic units). Numerous miles of perennial, intermittent, and ephemeral streams dissect the area.

The highest point in the planning area is West Butte with a summit elevation of 5,840 feet. The lowest points are in the Deschutes and Crooked River canyons, which drop to just under 2000 feet at the northern boundary of the planning area.

The Mazama province is represented in the western three-quarters of the planning area. It is covered by a continuous mantle of wind blown deposits of pumice and other volcanic materials spewed over the countryside when Mt. Mazama erupted about 6,500 years ago. Other volcanic activity and eruptions, as well as glacial actions, have created areas consisting of basaltic, andesitic, rhyolitic, and tuffaceous deposits and cinders and glacial till.

The John Day province is represented in the northeastern quarter of the planning area. Long, generally north-to-south, mountain ranges and valleys with ancient lake terraces and fans characterize the area.

The geology of the planning area is characterized by relatively young extrusive volcanic materials and volcanic derived sedimentary materials. For the most part the rocks are flat lying, being interrupted by a few rounded piles of volcanic material, small displacement faulting and an occasional topographic extreme, including Smith Rocks and the canyon of the Crooked River. Relief is moderate throughout the planning area. The topography of the Deschutes and Crooked Rivers is the product of numerous volcanic eruptions within and around the basin. These have contributed to a diverse section of lava flows, pumice air-fall deposits, and ignimbrites. Erosion of these volcanic materials has supplied large volumes of fragmental material to form the volcanoclastic sediments found in the basin. Interesting geologic features found in the area include cinder cones, lava flows, pressure ridges, and lava tubes (caves).

The La Pine sub-basin in the southwest portion of the planning area lies between the High Cascade Mountains and Newberry Volcano, and has served as a catchment for the materials eroded off the sides of the volcanic piles. The basin has filled with stream and lake deposits composed of volcanic derived silts, sands, and gravels with minor amounts of diatomite.

Most of the planning area is drained by the Deschutes River and its tributaries, which include the Little Deschutes River, Tumalo Creek, Dry River, Squaw Creek, Metolius River, Crooked River, and Willow Creek. Water is a limited resource in the agricultural areas of the survey area because of the limited precipitation, high infiltration rate, and moderate or high permeability of the soils.

Three important fault zones are present in the planning area, the Brothers, Sisters, and Walker Rim fault zones. The Brothers fault zone consists of numerous NW-SE trending right-lateral faults with displacements generally less than 50 feet (Orr *et al.*, 1992). This fault zone extends 130 miles NW from Steens Mountain and merges with the Sisters fault zone near Bend. The Sisters fault zone trends NE from just south of Bend and extends 40 miles to Black Butte (Sherrod *et al.*, 1997b). Approximately 50 faults ranging from 0.3 to 30 miles in length have been mapped in the Sisters fault zone. The Walker Rim fault zone extends southwest from the Newberry volcanic complex through the La Pine portion of the planning area toward Crater Lake.

Geological History

The geology of the planning area has been shaped by various volcanic events and processes that began 44 million years ago and continued to the present. These processes resulted in a complex assemblage of volcanic rocks including flows of basalt, andesite, rhyolite, welded tuff, and various tephra deposits of ash, pumice, cinders, and volcanic bombs. Prominent geomorphic features in the planning area include lava tubes, pressure ridges, columnar basalt, cinder cones, shield volcanoes, and deep canyons. Rivers in the region were often overloaded with volcanic materials and the subsequent erosion, transport, and re-deposition of these materials produced various volcanoclastic sedimentary rocks.

The oldest rocks in the planning area are of the Clarno Formation. Emplacement of these rocks began approximately 44 million years ago during the Eocene with the opening of a chain of volcanoes in eastern Oregon (Orr *et al.*, 1992). The Cascade Mountains were not present at this time and the Pacific Ocean shoreline was east of the modern day location of the Cascades. With no topographical barrier to moisture-laden air from the Pacific Ocean, a wet tropical climate prevailed and supported lush woodlands interspersed with open grasslands. The Clarno volcanoes erupted large quantities of ash, rhyolite, and andesite. Thick, loose ash deposits on steep volcano slopes frequently mixed with water to form large mudflows known as “lahars” due to the wet climate. These viscous flows moved like molasses over the landscape, entombed both plants and animals, and preserved them as fossils. Plant fossils found in these deposits include petrified wood, leaves, nuts, fruits, and seeds of tropical hardwoods (Retallack *et al.*, 1996). Fossilized remains of prehistoric rhinoceroses and horses are also found. The Clarno Formation crops out along the northeastern and eastern boundaries of the planning area.

In the early Oligocene (about 36 million years ago), the climate shifted from tropical to temperate, Clarno volcanism ceased and a short period of erosion ensued (Orr *et al.*, 1992). Then, a new episode of volcanic activity commenced, producing the rocks and ash beds of the John Day formation. The volcanoes of the John Day produced explosive ash eruptions and flows that blanketed much of the region. Dense clouds of hot ash swept across the landscape and fused into tuffs under heat and pressure when deposited. Basalt, andesite, and rhyolite lavas also flowed from these volcanoes. Rapidly deposited ash and mud from volcanic activity provided ideal conditions for fossilization of the semi-tropical plants and animals living in the region at the time. Preserved foliage from dawn redwood (metasequoia) and alder are common in these deposits (Retallack *et al.*, 1996). Animal fossils include various prehistoric cats, dogs, horses, camels, rodents, and rhinoceroses. Rocks of the John Day Formation crop out in the northern and eastern parts of the planning area including at Smith Rock and Powell Buttes (Brown *et al.*, 1980; Smith *et al.*, 1963).

During the Miocene and Pliocene, successive volcanic flows built Cascade Mountains high enough to become a topographic barrier to moist air from the Pacific Ocean, transforming the eastern Oregon climate into the dry climate of the present (Orr *et al.*, 1992). Volcanic activity during the Early Miocene (16-12.5 million years ago) in the

Western Cascades delivered large quantities of volcanic material into the Deschutes Basin and overloaded rivers with sediments. The Simtustus Formation was deposited in the northwest part of the planning area as rivers reworked these sediments into volcanoclastic sandstone and mudstone deposits up to a total thickness of 250 feet. During this time, about 15.7 million years ago, the Prineville basalt erupted from vents believed to be near Bowman Dam (Hooper *et al.*, 1993). This succession of flood basalts is present throughout the northeastern part of the planning area and beyond with some flows extending to Portland, Oregon. The Prineville basalt sequence crops out in the Crooked River canyon from the Prineville Reservoir area downstream to Prineville. The Deschutes Formation was created when another phase of volcanism began 8 million years ago. Early High Cascade volcanoes erupted andesite, basalt, and hot clouds of tuff-forming ash into the Deschutes Basin over a period of 4 million years. The Deschutes and other rivers reworked some of these volcanic materials into coarse conglomerates that are lithologically distinct from the fine-grained sedimentary rocks of the Simtustus Formation (Orr *et al.*, 1992). The Deschutes Formation has a thickness of 2000 feet on the western margin of the basin and thins to 50 feet at the eastern margin near the Ochoco Mountains.

Throughout the middle to late Pliocene and into the Pliocene (beginning 4 million years ago), the Deschutes Basin was subjected to more waves of volcanism (Orr *et al.*, 1992). Numerous cinder cones appeared within the basin and the area was flooded by large basalt flows from local vents. The most extensive basalt flows during this time originated from the Newberry shield volcano south of Bend beginning about 600,000 years ago (Sherrod *et al.*, 1997a). These flows blanket much of the western half of the planning area between Bend and Powell Buttes and extend north to Smith Rock and Lake Billy Chinook.

Water

Groundwater flow that originates in the Cascade Range is the major source of stream flow for the Lower Deschutes and Lower Crooked Rivers, and Lower Squaw Creek (USDI Geological Survey, 2001). Substantial groundwater discharge occurs along the lower 2 miles of Squaw Creek, the Deschutes River between Lower Bridge and Pelton Dam, the lower Crooked River, and in Lake Billy Chinook. The discharge of groundwater is controlled by geology, where the low permeability of the John Day Formation forces groundwater from the overlying Deschutes Formation to be discharged into the rivers. Discharge of groundwater is demonstrated by the numerous springs that emanate from the canyon walls of the lower Crooked River and lower Deschutes River gorges. The flows for Upper Squaw Creek, Little Deschutes River, Tumalo Creek and Crescent Creek originate as spring flows in the Cascades. Snowmelt from the Ochoco and Maury Mountains and springs along the South Fork Crooked River provide water for the Upper and Middle Crooked River. Natural flows of the Upper Deschutes and Crooked Rivers have been modified by 5 major reservoirs and diversions of water from the rivers for irrigation.

Social Setting

First Nations of the Region

During the first half of the 19th century, when Euro-Americans began exploring Central Oregon in pursuit of fur bearing animals and political objectives (Robbins 1997:40; Clark 1981:16- 17; Oetting 1997a:8), they occasionally encountered small groups of Indian people involved in seasonal activities throughout the BLM-administered lands now included in the planning area. According to observations by those outside travelers, the native people they contacted spoke numerous languages or dialects and were members of various tribal groups. A partial listing of those tribal groups included the following: Snake; Hunupui Eaters; Shoshone, Paiute; Northern Paiute; Juniper-Deer-Eaters; Warm Springs; Tygh; Molalas; Shahala; Wasco; Upper Chinook; Tenino; Celilo; Wyam; Wanapum; Sahaptin; and Klamath (USDI Bureau of Land Management 1990:19). In an attempt to alleviate some of this historical confusion, ethnographers and linguists doing studies in the late 19th and early 20th centuries, as well as reorganization during the establishment of reservations, concluded that native people living in the Central Oregon region at the time of white contact consisted of three primary tribal groups: the Wasco and Warm Springs; the Northern Paiute; and the Klamath.

During historic times, the Wasco and Warm Springs people occupied portions of the lower Columbia River and segments of the Deschutes and John Day Rivers (Confederated Tribes of Warm Springs 1992:2). The Northern Paiute were based in the Harney Valley but used resources along the Upper Deschutes and John Day Rivers as well as throughout the High Desert (Burns Paiute Tribe 1992, personal communication). In contrast to that, the Klamath lived beside the lakes and marshes of the Klamath basin in south Central Oregon, but used resources on a seasonal basis along the Upper Deschutes River and in the adjacent High Desert area (Zucker *et al.*, 1983:11). Conflicts between those groups over lands and resources did occur periodically (Oetting 1997a:8) leaving it largely unknown which group may have held the territory on a consistent basis. Yet despite those ambiguities, at least three assumptions about pre-contact land tenure can be made from both the archaeological and ethnographic evidence: changes in environmental conditions warranted modifying land use strategies; one group simply out-competed another for resources; or clashes between groups established new tribal territorial boundaries. What the archaeological record does confirm is that, although Indian people established many temporary camps throughout the area during the past 10,000 years (Pettigrew *et al.*, 1998:3.3), there were few, if any, permanent settlements in the Upper Deschutes Planning Area (Oetting 1997b: 5-10). Whether early prehistoric people were culturally affiliated with contemporary Indians living in the region today is not known.

Indigenous Traditional Lifeways and the Cultural Landscape

Pre-contact Indians living in Central Oregon were members of hunting and gathering societies who survived by virtue of a detailed understanding about their surroundings (Hunn 1990:91). Like all groups of hunters and gatherers, through time and across space, they followed broad seasonal rounds across the landscape. With a knowledge about resources that comes only from living close to the land, those annual rounds set a schedule determined by the season and dictated by soils, water, and elevation, to put people in a particular place, at a particular time, when particular resources were available for harvesting (Aikens and Couture 1991:21). A typical seasonal round for some, but not all, groups of Indian people living in prehistoric Central Oregon might be as follows: (April) low elevations-first green shoots appear; (April-May) tuberous and globulous roots from semi-arid, rocky soils at moderate elevations; (April-May) river stations for

salmon; (late June) upper elevation meadows for bulbous roots; (late June-early July) rivers for blueback salmon and summer steelhead and possibly to gather various early fruits such as serviceberries, gooseberries, currants, and chokecherries; (late August-September) mountain locations for huckleberries, deer, elk; (September-October) river stations for fall Chinook and mountain locations for deer and elk; (November-March) occupation of winter villages (Hunn 1990:119-134). While in winter villages, people often took the opportunity to take waterfowl and procure non-migratory species of fish from local rivers, streams, and lakes and to hunt for various large and small game in the immediate vicinity. Additionally, at some winter village locations in Central Oregon, people would participate in communal rabbit or pronghorn drives on the high desert (Aikens and Couture 1991:16).

This review covers only a small percentage of resources used by Central Oregon native people during their seasonal round. Ethnographic and anthropological studies conducted over the past one hundred years inform us that dozens of different plant and animal resources, from scores of different locations, were used by pre-contact Indian people living in Central Oregon (USDA Division of Botany 1897; Spier 1930; Couture *et al.*, 1986; Ellis *et al.*, 1998; Hunn *et al.*, 1998). The knowledge of those resources not only provided for the procurement of many different kinds of foods and medicines but also the raw materials to produce tools, utensils and weapons, shelter, clothing, and items of personal adornment, power, wealth and prestige. Taken from that perspective, it becomes obvious that, “the totality of the regional landscape has importance” to local populations of Indian people (USDI Bureau of Land Management 1995:30).

Aboriginal patterns tethered to annual rounds have been greatly disrupted since white settlement and development in Central Oregon. With the arrival of Euro-Americans property ownership changed; private property was fenced; soils plowed under or grazed over; irrigation canals, roads, and railroads constructed; forests cut; wildland fires suppressed; and rivers dammed and reservoirs created. Those activities have had a tremendous affect on the plants, animals, fish, and sacred places upon which native people depended. Despite those changes to the land and displacement of resources, many contemporary Indians continue to practice and follow certain aspects of the traditional way of life. Throughout Central Oregon and beyond, they gather roots, berries, various seeds, and medicinal plants; fish; hunt game; and collect numerous items for ceremonial and spiritual purposes. Although changes to the land have, in some cases, forced contemporary Native people to seek resources significant to their cultural identity at new locations, still, other locations have been visited continuously for hundreds and even thousands of years. The rights of Federally recognized Indian Tribes to maintain their cultural identity through such traditional activities on BLM-administered lands has been guaranteed to them as a result of various treaties, statutes, congressional acts, court cases, and executive orders.

Euro-American Settlement and Development and Historic Resources

The first Euro-American encounters with Central Oregon came by way of agents of empire and the federal government. Meriwether Lewis and William Clark skirted the northern edge, but never penetrated the hinterlands of Central Oregon during 1805 on their trip down the Columbia River to the Pacific Ocean.

During the next half century, Central Oregon was entered by fur trappers and various explorers in the employ of the Hudson’s Bay Company and the federal government. Peter Skene Ogden and his fur trapping brigade penetrated the Upper Deschutes and Crooked Rivers during their Snake country travels to Harney Basin in 1825-1827 (Vaughan 1981:2; Robbins 1997:223). Ogden’s excursions into Central Oregon

were followed in the 1840s and 1850s by the explorations of John C. Fremont, Robert Williamson and Henry Abbot. Members of the Army Corps of Topographical Engineers, their respective missions resulted in the mapping and documentation of unknown portions of Central Oregon lands and resources. In his final report, Abbot concluded that the region was unlikely to develop economically as it was “separated from the rest of the world by almost impassable barriers” and offered “very few inducements to settlers” (Brogan 1964:236).

Despite Abbot’s admonition, settlers did come. Most of the early immigrants of the 1840s and 1850s, however, did not stay. Most immigrants went through Central Oregon from the east on their way to the more fertile lands of the Willamette Valley. But by the 1860s a network of roads and trails were beginning to form throughout Central Oregon as settlers took up lands within valley basins and miners headed to the gold camps in the John Day country. Entering the area from California to the south, miners traveled the Yreka Road to the John Day gold fields while settlers in covered wagons, often pushing herds of cattle, swine or sheep, crossed the Cascade Mountains through Santiam Pass following the Willamette Valley Cascade Mountain Military Wagon Road or over the McKenzie or Scott’s Trails. The Dalles to Canyon City to Boise Road also witnessed thousands of immigrants entering Central Oregon not only south from the direction of The Dalles but east from Boise as well (USDI Bureau of Land Management 1990:74). Still another important north/south arterial, known as the Huntington Road, was developed for transporting goods from Fort Dalles to Fort Klamath after the establishment of the Klamath Indian Reservation in 1864.

Arrival of large numbers of settlers had a tremendous impact on the lifeways of Indian people living in the area. As a result of those impacts, tensions mounted between the two cultures and eventually escalated into the conflict known as the Snake Wars (USDI Bureau of Land Management 1990:75). With the outbreak of that conflict, in 1859, numerous military garrisons were established along the Willamette Valley Cascade Mountain and The Dalles Military Roads. In Central Oregon those garrisons included Camps Polk, Gibbs, Watson, and Maury (Preston 1978:60). Established to protect miners and settlers and keep lines of communication open, troops occupied those posts sporadically until the end of hostilities in 1868.

White settlement spread out to all areas that would seemingly support farming or ranching in Central Oregon at the close of Indian/White hostilities. Cattle and sheep herding expanded in the 1870s from the previous decade, though it would not reach large scale proportions until the end of the century (USDI Bureau of Land Management 1990:75). Far more important, however, was the development of towns and rural communities during the final quarter of the 19th century and continuing into the first two decades of the 20th century. It was during that period that all of the communities known to exist in the area today were established: Prineville in 1871; Bend in 1886; Madras in 1903; and Redmond in 1905 (McArthur 1982:54, 218, 606, 616; Clark 1981:37). Many other rural post office communities with names such as Haystack, Lamonta, Grizzly, and Millican were also established during that period but have all but disappeared with the passage of time.

After the turn of the 20th century, the growth and economic development of the larger, more established, Central Oregon communities were substantially secured due to the occurrence of three primary events. These were the construction of a network of irrigation canals; completion of the Oregon Trunk Railroad to Bend; and the construction of two large, Minnesota-based, sawmills in Bend.

Promoted by railroads, irrigation companies, and local land developers as a “fertile tract of land capable of high cultivation,” many people were lured to Central Oregon with the hopes of turning 320 acres of government land into a bountiful garden (Allen 1987: 34; Clark 1981:56, 112). By 1913, new communities with names like Imperial, Stauffer,

Hampton, Brothers, and Fremont appeared all across the area “to serve homesteaders whose cabin lights on winter evenings glittered like fireflies in the sage lands” (Brogan 1964:143). Irrigation did enhance the agricultural potential of Central Oregon and continues to do so in the present. But most homesteaders who arrived in the area after the turn of the 20th century were forced to take up marginal lands with little access to naturally occurring water or those which were outside the reach of irrigation systems. Many people left the area after facing short growing seasons, lack of water, hordes of jack rabbits and dry rocky soil (Allen 1987:91; Clark 1981:56-63; Coe 1996:228-237). It was fortunate for many of those ill-fated homesteaders that in 1916 two large saw-milling outfits began operations in Bend. Those new mills, and their associated logging camps, offered many people the prospects of a new beginning at a steady job with a reliable income (Allen 1987:85, 99; Gregory 2001:44).

During the greater part of the 20th century, Central Oregon’s population growth and economic development hinged upon agricultural and timber industries; industries whose activities largely depended on BLM-administered lands for resource extraction. Although still important to various elements of local economies, those industries had greatly diminished by the close of the 20th century to be replaced by yet another industry tethered to use of the public domain— the recreation industry.

Current Social Setting

The planning area occupies two separate portions of Central Oregon and contains about a sixth of the geographic area of Crook County, a quarter of Deschutes County, a small portion of southern Jefferson County, and a small portion of Klamath County. This area includes or is adjacent to the most populated area in eastern Oregon and has experienced one of the highest growth rates in the state. The population of Crook County is 19,182, an increase of 36 percent from 1990, the majority of which reside in the planning area. About half of the 115,367 residents of Deschutes County live within the planning area. The number of residents in Deschutes County has increased by 54 percent since 1990. The population of Jefferson County is 19,009, an increase of 39 percent from 1990. A small area of northern Klamath County is also in the planning area.

The descriptions of the existing conditions emphasize Deschutes and Crook Counties as representative of existing conditions in the planning area since about 93 percent of the planning area is in these two counties.

Crook County covers an area of about 1,914,200 acres in the geographic center of Oregon. While similar in size to neighboring Deschutes County (Crook County ranks 12th largest in size among Oregon’s 36 counties, and Deschutes County ranks 11th largest), the population of Crook County is only about 1/6th that of Deschutes County. Land ownership in the county is evenly split between the public and private sectors, with about 48 percent privately owned and about the same amount in federal ownership. The area of public lands adjacent and 1/4 mile in depth to subdivisions is about 20,760 acres, or about 5 percent of the planning area (Wortman-BLM, 2004). Land use in the county is primarily devoted to agriculture and forestry. According to the Oregon Employment Department (2001), Crook County’s economy and employment remains heavily dependent on lumber and wood products manufacturing, which account for 24 percent of non-farm employment. A study of communities in the Upper Columbia River Basin ranked Prineville (the Crook County seat) as “high” for specialization in the category of wood product manufacturing employment (USDA Forest Service and USDI Bureau of Land Management, 1998). The employment and population figures help describe the local context for BLM decision-making in Crook County — a county experiencing rapid population growth but also grounded in its history of “wide open spaces” and natural resource-based economy.

Deschutes County covers an area of 1,955,200 acres, of which 80 percent is in federal ownership. Although lumber and wood products still comprise about 39 percent of manufacturing in the county (Oregon Employment Department, 2001), rapidly growing urban centers in Deschutes County, notably Bend and Redmond, are becoming increasingly less specialized as service, construction, and other employment sectors grow. Neither Redmond nor Bend ranked “high” in any employment specialization categories evaluated in the Upper Columbia River Ecosystem Management Project report (USDA Forest Service and USDI Bureau of Land Management, 1998). Preister (2000) reports two dominant and contradictory social themes in areas studied near Redmond, Sisters, and Bend: part of the community expressed grave concerns about regional growth, while other community members expressed excitement about community and economic growth in the region. Observations in the planning area in southern Deschutes County near the unincorporated community of La Pine showed that residents are drawn to the area to live in a scenic, rural community in semi-seclusion, with more dispersed settlement patterns of residents scattered throughout the mountains, woods, and back country areas (Preister, 2000).

The Central Oregon Community Investment Plan (COCIP, [Central Oregon Intergovernmental Council, 2002]), was heavily relied upon to summarize population, income, and other socioeconomic data for Central Oregon counties. The data presented from this and other sources show the changing nature of the local social and economic landscape in the planning area with:

- Population growth rates above average for the state until 2020 or beyond;
- A more ethnically diverse population;
- An older, more educated population with more disposable income;
- An increase in the average income of residents and an increase in the number of people living in poverty;
- An increase in the diversity of jobs; and
- An increase in the cost of housing.

Social and Economic Overview

The social environment and the populations that make up that environment are crucial to the land use planning process. In order to understand local communities better the Forest Service and/or the BLM commissioned two studies: Preister, 2000 and a Social Values Survey conducted for the study area in 2001. The findings of these studies are incorporated throughout the social and economic sections of this document.

Both studies found that growth is both welcomed and dreaded by Central Oregon residents. Those who enjoy the urban life style and the added benefits associated with that life style are particularly excited about the increased growth and urbanization in Deschutes and Crook Counties. The excitement is largely due to the anticipation of increased opportunities to experience the culture and comforts associated with larger cities. However, there are many other Central Oregonians who see the increase in population growth as negative and as a significant threat to a treasured way of life.

While Deschutes County has the largest urban population centers in the planning area, there are non-urban residents in Deschutes County and in Crook County who do not necessarily need the environment to remain static, but who do have a preference that their long-time customs and cultures be respected and preserved. An underlying concern that surfaced in both the social research efforts described above is that the rural way of life that has always been, and in many ways still continues to be, is perceived to be in jeopardy. Many residents talked of a “cultural split” between the growing urban influence of Bend and other areas of Deschutes County and the more rural zones of the

north, east, and south. Some fear that the lifestyle they value so highly may become obsolete as a result of the increased population and urbanization occurring in the area.

“The rural areas struggle to maintain their way of life in the face of economic decline of traditional sectors of ranching and timber. They are becoming bedroom communities for the urban areas, with attendant loss of local business and tax base. Prineville, for example, a generation ago, had its own economy centered around timber productions. Its residents point out how commuting to urban jobs has become dominant, retail has been lost, and how their economic fortunes are increasingly tied to the industrial and housing markets of the Bend-Redmond area” (Preister, 2000).

According to Preister there are three kinds of diversity that characterize the present era: social, economic, and recreational.

“Social diversity means there are different kinds of people than ever before. The presence of the rural outlook remains dominant in many places, but added to it are urban values and ideas. The increased presence of senior citizens, along with the costs and benefits of their presence, is felt throughout the region. The area is packed with young people, those who stay for a short time to enjoy the ambience of the recreation atmosphere and the Bend nightlife; young professionals who are drawn by new opportunities; and young people from existing families who do not have to leave anymore to obtain gainful employment” (Preister, 2000).

Within the social context there is a robustness to social life presently in Central Oregon. (Preister, 2000). These are not necessarily communities in rural decline but in urban growth. Since 1990 the distribution of urban versus rural residents has shifted for both Crook and Deschutes Counties, according to Census data. Since 1990 the ratio of urban to rural residents for Crook County has shifted 12.39 percent to urban from rural going from 37.95 percent urban/62.05 percent rural in 1990 to 50.34 percent urban/49.66 percent rural in 2000 as shown in Table 3-1. The shift from rural to urban residents for Deschutes County has increased by a larger percentage in the amount of 19.6 percent going from 36.8 urban/63.2 rural to 56.4 percent urban/43.6 rural, also shown in Table 3-1.

The decrease in the rural population for Crook County has occurred for non-farm residents. The percent of rural farm residents for Crook County has actually increased since 1990. For Deschutes County the decrease in the rural population has occurred both for farm and non-farm residents. See Table 3-1 below.

Table 3-1 Percent of Population in Urban vs Rural Areas, and in Farm vs Non-Farm Residences in 1990 and 2000, and Percent Change

	Crook County			Deschutes County		
	1990	2000	10-Year Net Change	1990	2000	10-Year Net Change
Urban	37.95%	50.34%	12.39%	36.80%	56.40%	19.60%
Rural	62.05%	49.66%	-12.39%	63.20%	43.60%	-19.60%
-Farm	5.54%	6.30%	0.76%	2.67%	1.24%	-1.43%
-Non-Farm	56.51%	43.36%	-13.15%	60.47%	42.36%	-18.11%

“Economic diversity means that there is a broader variety of ways to make a living in the region.... A number of observers pointed out that the relatively dry and sunny climate, the stunning visual beauty of the area, plus the diverse outdoor recreation opportunities, are the primary driving forces for the current growth. They argue that enhancement of quality of life considerations is the most important challenge for preserving economic growth. This point of view is a remarkable turn around from just 15 years ago. It represents a shift away from commodity production (cattle, lumber) to amenity production (scenery, clean water, and open space)....

The commodity economy was primarily a subsistence based economy where ranchers, loggers, and farmers worked from dawn to dusk to make a living—a living that may or may not have been prosperous. Now the economy has shifted so that people have more free time and more money to spend on recreational pursuits. There is now a wider variety of situations to deal with in terms of public land management....

Farming, ranching and timber activities still support a large segment of the population. High technology, light manufacturing and other industrial activities are advancing at a steady pace. Recreation related businesses are proliferating: guest ranches, resorts, golf courses, river and forest outfitting and guiding, bed and breakfast operations, antique and craft shops, galleries, and recreation centers. Professional services from real estate to legal support to consulting firms are growing to provide for the needs of this expanded activity. If this activity can be done in a way that does not impoverish or leave others behind, then economic diversity speaks well for the ability of people in the planning area to remain resilient into the next generation....

Although continuing in the economic environment, the traditional sectors of agriculture and timber have been steadily declining. There are more people everywhere and settlement in the rural areas is motivated by a desire to “get away from it all.” The emerging economy has left some people in the dust—an increased gap between rich and poor has been widely noted by residents and some officials. Some people talk of the “negative spiral of development” where economic development spurs jobs that bring people in, that creates more impacts, while unemployment stays the same and infrastructure puts unfair burden on existing residents” (Preister, 2000).

At present, primary industrial activity for Crook and Deschutes Counties’ is listed in Table3-2.

Table 3-2: Primary Industrial Activity for Crook and Deschutes Counties

Crook	Agricultural Products Metal Fabrication Primary Wood Products Secondary Wood Products Tire Distribution Trucking
Deschutes	Aviation High Technology /Software Recreational Equipment Retail Trade Secondary Wood Products Tourism

“Oregon Employment Department expects that the employment growth in Central Oregon in the coming years will occur in service, trade, and government sectors, excluding federal employment. Extraction-based manufacturing will continue to give way to more diversified manufacturing. The national recognition of the area as a recreational destination area will fuel the economy as well.” (Priester 2000: 22) . . .

Recreational diversity is enormous. The rural areas are characterized as supporting dispersed activities of hunting and fishing, while other areas are intensive and high density, such as skiing at Mt. Bachelor. Central Oregon has tremendous visitation from other areas of Oregon, the nation, and the world. The study reported finding patterns in this visitation. “People from Portland and Seattle, and others from out of state tend to recreate . . . northwest of Bend on Century Drive. Historically, people from the Willamette Valley (Eugene, Salem) recreate further south on Deschutes National Forest, west of La Pine. And as crowds become unpalatable in the north, they are coming further south to . . . Crescent, and Odell” (Preister 2000). Rapid growth and the increasing urbanization of Central Oregon are contributing to an increase in public land use conflicts amongst the different types of user groups.

Population growth and increased urbanization are going to occur regardless of land management planning. Those involved with the responsibility of managing public lands face the same constraints and are able only to manage the land in the best way possible under the multiple use concept identifying and weighing the needs and concerns of all publics involved.

Subsistence

While findings in the 2001 Upper Deschutes Resource Management Plan Social Values Survey reveal that “43 percent of low income residents rely on BLM-administered lands for subsistence,” this is a relatively small percentage of residents given that the total poverty population for Crook and Deschutes Counties is 11.3 and 9.3 percent respectively. As stated previously, from 1992 to 2002, firewood collectors gathered about 13,000 cords of wood from BLM-administered lands in the planning area, generating about \$1,300,000 of economic benefit to permit purchasers (although there were personal labor and equipment costs for the cutting and hauling of the wood and firewood costs have not always been \$110 per cord).

Despite the population growth experienced in the planning area over this same time period, local public demand for firewood seems to be stable or slightly declining. This trend may be due to local government code restrictions on the use and installation of wood burning stoves and increased use of other heating systems in new homes.

Many respondents of the social values survey reported using BLM-administered lands for subsistence or economic gain. Slightly more than 25 percent of all respondents indicated relying on BLM-administered lands for subsistence purposes. Nine percent of respondents use BLM-administered lands to supplement other income, while only 2 percent reported use of BLM-administered lands as their sole means of income. Of those respondents (88) that indicated they use BLM-administered lands for economic gain, nearly one-half indicated they earn less than \$1,000 annually. Nearly 20 percent of the 88 respondents indicated they generate \$25,000 or more annually.

Crook County and Prineville

Crook County’s character is especially rural in nature. It is inhabited by multi-generational residents that have strong ties to historical customs, cultures, and resource based industries. Crook County’s residents place a high value on their historical way of life, as well as a high value on public lands. In recent years the county has experienced rapid growth that has impacted the historical way of life successfully preserved for

so many years in the county. Increased growth has meant an increase in urbanization, increased pressure on local resources, infrastructure and public land use that have all contributed to increased user conflicts. As growth continues, as it is expected to, the nature of the conflicts can be expected to increase in intensity. Although long-time residents of Crook County do not entirely dislike the idea of new people coming in, there is some resistance as many do not want to see any changes because they fear their community will become more like “the big city.”

“Since the 1860’s agriculture and livestock have been an important factor in the economy of the area, and they remain so. Construction of the Ochoco Dam in 1918 and Bowman Dam in 1960 helped to stabilize agriculture, and also developed tourism and recreation on the lakes impounded by the dams. Lumbering and the remanufacturing of lumber products continue to be of importance to Crook County’s economy as the region is dependent on wood products, agriculture and manufacturing....

Crook County and Prineville now are in a rapid stage of transition to a very different future and struggling to cope with those changes. The timber harvest and processing industry is greatly reduced. The last primary processing mill, Ochoco Lumber, was sold piecemeal at auction in March, 2004. There are still more than 1,000 jobs in the secondary processing industry, but the materials for conversion must be brought in from some distance.” (Crook County Natural Resources Planning Committee – CCNRPC).

“Crook County has managed to steadily diversify its employment and economic base. It’s well-established manufacturing heritage is thriving. Tire manufacturing and distribution has been successful in the community for over fifty years. Prineville is the home and headquarters of Les Schwab, Oregon’s third largest privately held company, the third largest overall Central Oregon employer, and the largest independent tire dealer in the nation. Les Schwab’s operation has a significant impact on the economy of Crook County employing nearly 1,000 people in Crook County with annual company sales reaching \$1 billion. Les Schwab is a significant source of employment for ex-timber and wood products workers.

Other large manufacturers, also important to the local economy have included American Pine Products and Pioneer Cut Stock. These relatively large firms are successful because of the community’s long manufacturing heritage. Outside the manufacturing and distribution sectors, agriculture plays an important economic and cultural role for residents of the town and Crook County. Annually the industry contributes more than \$40 million to the local economy in commodities sold” (Economic Development for Central Oregon).

“Recreation is rapidly increasing in importance. The nine-mile stretch of Crooked River below Bowman Dam is one of the most popular year-long fishing opportunities in the state, and people from around the nation (and internationally, as well) come to fly-fish and enjoy the scenic canyon. Prineville Reservoir visitor use has literally exploded in the past decade, and is recognized as one of the top destination sites in the state. Hunting, fishing, rockhounding, and other activities in the dispersed areas remain extremely popular and important to the county economy. There is also increasing interest in activities like hiking, mountain biking, and OHV uses. Visitor services are increasing to host these increasing uses” (CCNRPC).

Not only is recreation increasingly important, the recreation-tourism sector of the economy is well growing. “Hunting and year-round fishing are major attractions for visitors. Rockhounding in the area is world renowned and is showcased each year at a Rockhound “Powwow” at the County Fairgrounds (City of Prineville 2000: 3). New recreation stores, such as the fly fishing store, have reportedly done very well” (Preister 2000).

Overall, like other parts of Oregon, the economy has shifted from a reliance on agriculture and timber to one of trades and services fueled by recreation, tourism, and retirement. “The retirement influence in Crook County is quite pronounced. Transfer payments, which are the infusion of pension and other retirement income into an area, grew by 71 percent between 1987 and 1997. It has become the number one source of personal income for Crook County residents” (OED 2000: 40). Approval for construction of a proposed resort in Crook County would add to the trades and services economy providing also the economic affects that typically include lower wages for these types of jobs, thus making housing less affordable for these employees as property values in the area would increase as the wages decrease.

This economy often requires both spouses to work and is linked to community issues such as youth supervision after school. Another reflection of the growth and economic shift has been the visible increase in commuting in the last 5 to 8 years due largely to the economic leakage related to a loss of retail stores to Bend. Much of the increased settlement contributing to the economic leakage is “spillover” from the growth in the Bend-Redmond metropolitan area as Prineville is the source of lower cost land and housing; although the housing cost differential is beginning to disappear,” (Preister 2000) and would continue to do so as a result of increased growth as described in the paragraph above.

Given the rapid increase in population growth combined with the trend in distribution of the growth, Crook County residents are facing new challenges daily. While some people do not mind the changes, others do and consider them to be a threat to their historical and rural way of life. Population growth in Crook County has been disbursed throughout the county occurring both in the city of Prineville and the outlying areas of the county. According to statistics provided by the Crook County Building Department (Spring Groves, 2004) for construction permits issued June-December for 2000 through 2003, the trend for new construction for single family dwellings is greater outside of Prineville at an average of 64 percent versus only an average of 36 percent in Prineville. The reverse is true for commercial permits. The distribution of permits for 2000 through 2003 has been 74 percent within Prineville and 26 percent for areas in Crook County outside of Prineville.

Grazing is an important part of Crook County’s heritage. For many ranchers in Crook County grazing has been a way of life for two and three generations. Much of the customs and cultures for these ranching families are tied to grazing on public lands, and grazing in general. It has been estimated that about 50 – 60 percent of grazing in Crook County occurs on public lands while about 40 – 50 percent occurs on private lands (Cory Parsons, OSU County Extension Agent, personal communications, 2004).

Increased population growth is putting increased pressure on recreational demand that can compete with grazing needs on public lands, the zoning approval for a new resort to be constructed in Crook County will add to this pressure, as is new construction of single family homes. The ranching industry is also changing from primarily family owned operations of people who have been here for several generations to either corporate or new people coming here with money from elsewhere to operate ranches for a variety of reasons. The primary difference is that new ranchers lack the long-term ties to the community and local culture. Ranching is a large part of Crook County’s history and parts of the county consist of many large based properties with combined large allotments. Given the trends of increases in population, urbanization and resort development in Crook County, and the preference for bigger lot sizes and animals by new residents, these new development pressures are resulting in farmlands and ranchlands being subdivided. Since there is a strong historical tie to ranching and its associated customs and cultures as a local tradition for multi-generations, the increase in population and breaking up of the ranching lands can have an adverse effect on the rural character of Crook County and its residents.

Preister (2000) found that Crook County residents are outdoor oriented and take ample advantage of outstanding hunting and year-round fishing. The community “rolls out the red carpet” for visiting hunters—stores stay open late, baked goods are sold, and booths provide information. The reservoirs bring in 300-400,000 visitors each year. Agriculturalists complain of trespass, vandalism, and other problems created by this influx. Residents believe that education of recreationists will be an ongoing challenge both for visitors and residents. Other issues highlighted as problems by county residents include: parties on BLM-administered lands, people taking their trucks out and trashing out some open space, and also the increasing dumping of trash on public lands. Another issue mentioned in Preister (2000) was the gradual decrease of BLM grazing allotments over time.

Central Oregon and other Northwest community leaders continue to plan for the orderly development of the county and to seek diversity in industry to maintain the stability and livability of Crook County. As part of this effort the Crook County Natural Resources Planning Committee is proactive in that it is currently working on a county empowerment movement where the obligation of protecting custom, culture, and economy is an important concept. Crook County’s purpose in this effort is to try to better define what makes Crook County a special place to live and work, and for future planning, the kinds of things that need to be considered as the inevitable growth occurs. In the Committee’s initial drafting of customs, public lands and the rural nature of the county are a consistent theme. Culture and economics emphasize the importance of public lands to the county. (Crook County Natural Resources Planning Committee Meeting: 2003).

Deschutes County

The following discussion of Deschutes County are direct quotes excerpted from the 2000 Preister Report and summarizes their findings which were based on networking with individuals and focused on developing brief characterizations of communities according to the individuals they interviewed.

One effect of urbanization is the increasingly specialized nature of its land use. Land use in Deschutes County up to the recent past has been mixed, as is typical of a rural area. Whether in Redmond, Sisters, or Bend, it is easy to find mobile homes next to custom homes, homes neatly kept next to homes with last decade’s cars in the yard, large animals on one parcel next to one that has suburban grass, or fences around one property next to properties without. Only in the core urban areas and the newer housing areas is there evidence of specialized purposes—adult communities, middle-class subdivisions, and so on. In the future, it is likely that different uses will be regulated more closely.

The area is experiencing an economic transition from timber and agriculture to manufacturing, recreation and retirement. The trades and services sector dominate the economic base.

The Deschutes Fair and Expo Center, completed in 1999 and built on 132 acres, is the largest fairgrounds in Oregon. It has rapidly become a regional facility to showcase numerous recreational, sports, and cultural events (The Redmond Spokesman Visitor Guide 1999). There are presently three destination resorts in the area—Black Butte, Eagle Crest, and Sunriver. Their promoters point to the benefits of employment and amenities for the local area, with only the impacts of “traffic and school kids.” Resort detractors point to the generally lower pay of these facilities and the demand for affordable housing for workers that such facilities create.

The recreation activities in the area are enormous. One local official reported that the “area has 10 million visitor days per year. That Deschutes County generated \$1.8 million in 1999 from the lodging tax, one million of it being attributed to Bend itself. The Tourism

Council is working on an Oregon designation as a “Quality Service City,” to qualifying it for money. A “customer service survey” is underway as well as development of a five-year plan.”

The state Tourism Commission reported that tourism is Oregon’s 4th largest revenue source, generating an estimated \$5.2 billion in 1998. Total visitors to the state in 1997 were estimated to be 43.5 million. Specific to the Bend area, the survey reported that 95 percent reported that they were likely to return. (Deschutes National Forest, Public Affairs Officer, 5/14/2000).

Natural Resource Issues

Several natural resource related issues have been identified by residents of Deschutes County. They include trash, recreation, recreation fees, access, off-road vehicles, communication, inadequate law enforcement on public lands, resource use, and fire. Also important are land exchanges. Land exchanges have a long and varied history in the area, and many exchanges have been between agencies. The values of land trades of BLM-administered lands around Redmond for the airport and the fairgrounds, and perhaps the school, is a premier case of supporting community development in appropriate ways. Residents have identified other potential sites. The most logical future growth in Deschutes County, for example, is between Bend and Redmond, the site of much BLM-administered lands.

Redmond

Redmond was created through irrigation infrastructure developed by community leaders in the early part of the 20th Century. Between 1990 and 1998, Redmond’s population grew by 74 percent, to 12,435 (OED 2000). A city official estimated that Redmond has grown 13 percent in the last two years. The city issues a building permit a day. Infrastructure capacity is adequate for now. The settlement pattern of Redmond is fairly high density in the inner areas, and larger acreages and the presence of farm animals in the periphery. The city has also started to build larger, more expensive homes in the southeast.

The present economic base of Redmond is linked to the greater area, especially Bend, as well as to the region. The growth of recreation, tourism and high tech industries that is fueling the region is having unique effects in Redmond. First, it is sharing the title with Bend of regional service center. The presence of the airport, the new fairgrounds in Redmond, the planned expansions at COCC’s North Campus, and the strip development filling in between Redmond and Bend, means that Redmond will be a key player in the region as time goes on. Second, its base of relatively affordable housing stock is serving workers of the area very well, contributing to commuting frustrations, but providing a service not matched elsewhere. Third, similar to other areas that must live in the shadow of a larger city, Redmond is specializing in its activities so that it remains attractive to diverse segments of society. For example, Redmond has become known for its 11 antique shops and attracts area visitors and Bend residents. It is moving ahead with its railroad depot restoration and taking other steps to showcase its history.

The major employers of Redmond are the Redmond School District (675 employees), Eagle Crest Resort (640) and the Central Oregon District Hospital (294) (Spokesman 1999: 30).

Many long term residents of Redmond remember the agricultural history of Redmond and its transition away from that base. Apparently, the soils in the area are not that good, with the exception of the Lower Bridge Country. Agricultural activity in the area operated in fads or spurts. In the 1960s and 70s, small dairies were very popular until the bulk dairies began to out-compete them. Poultry was introduced. Farmers thought

because it was dry there would be less respiratory disease, but they ended up bringing disease from the “valley.” There was not much market, and bigger operations again took over. Many tried sheep off and on, others tried potatoes.

As agriculture declined, landowners shifted to other uses. Those that subdivided prior to land use laws then sold their parcels and moved on to other things. Others went into business for themselves. Today, much agricultural use in the Redmond area occurs on “hobby farms.” These farms generate little income, provide a tax write off for the owners, and are increasingly expensive to purchase.

Parks are of significant importance to Redmond residents. The city has numerous parks. Open Space Park in the northeast area of town is utilized by many people for walking, hiking, jogging, and baseball games. Residents are presently debating about Dry Canyon, whether all or part of it should be a park, and how to compensate owners if their land is not developed.

Community issues for Redmond include parks, poverty, transportation, and loss of retail.

Sisters

The economic base of Sisters is centered around tourism and recreation along with some light industrial activity. The story is that Sisters was rejuvenated in the 1970s when principals from Black Butte Ranch offered to subsidize redevelopment of the retail areas of Sisters if merchants would agree to an “old western” motif. Merchants agreed, sizable investments were made, and there has been a core of tourism related businesses functioning ever since. Sisters is known as the summer playground for people from “the valley,” that is, the Willamette Valley to the west. Summer homes are prevalent.

Community issues in Sisters center around the major infrastructure issue of sewage. The community’s reliance on septic systems has not been adequate, and a sewage treatment plant was recently approved. Construction should begin soon. The Forest Service played a crucial role in the sale of land to the city for sewage treatment. It is expected that completion of the sewage plant will induce intensive home building and home redevelopment activity with affordable housing as a main priority.

Bend

Ranching in the Bend area initially consisted of large operations. In recent years, agriculture has involved hobby operations or specialty products, like llamas, plants, and even a gin making plant. A feed store in a new suburb in Bend is very busy. Their local business is primarily suburban.

The city of Bend is struggling to manage the growth of the last several years and to maintain its livability. It has recently completed a citizen survey that identified transportation and growth as major community issues.

Population, Demographics, and Growth

According to the 2000 Census data, the population of Crook County had reached 19,182, and the population of Deschutes County had reached 115,367 (Table 3-3). During the previous 10 years, Deschutes County had the highest overall percentage population change in the state (53.9 percent increase), steadily adding an average of 4,041 people per year. Crook County ranked 5th in the state for percentage of population change (36 percent increase) and has added an average of 507 people per year in the last 10 years (Central Oregon Intergovernmental Council, 2002). People moving into both counties accounted for about 90 percent of this population growth (Oregon Employment Department, 2001).

Prineville and Redmond are the only two incorporated cities located within the planning area, although the City of Bend is located immediately adjacent to the planning area. Both Redmond and Bend are among the 20 fastest growing cities in Oregon. Bend, the Deschutes County seat, has a population of 52,029, making it the largest city in eastern Oregon.

The Central Oregon region is expected to continue to grow at a faster rate than the rest of the state through 2025 (Table 3-4). Based on data from the Center for Population Research and Census at Portland State University (Portland State University, 2003), about 75 percent of the area-wide population increase through 2010 will be due to in-migration.

The planning area will also be affected by nearby fast-growing cities outside of the planning area, such as Bend, Madras, and Sisters, as well as developing, but as yet unincorporated, areas within the planning area. Powell Butte, O’Neil, Terrebonne, Tumalo, Wickiup Junction, La Pine, and Alfalfa have all been designated “Rural Service Centers” by the counties and are areas of anticipated future growth, as are many of the developed and developing residential communities within the counties.

Ethnicity

The racial composition of the population in the counties is relatively homogenous compared to the state population (Table 3-3). Data from the 2000 Census show that about 93 percent of the residents of Crook County are white, as are almost 95 percent of the residents of Deschutes County. Since 1990, the relative percentage of white residents has decreased slightly as the percentage of minority groups has increased, with the highest increases being Hispanic or Latino (2 to 3 percent) (Oregon Employment Department, 2001; BLM, 2001a).

Table 3-3 Population Profile

Population	Crook	Deschutes	Both Counties	Oregon
1990	14,111	74,958	89,069	2,842,321
2000	19,182	115,367	134,549	3,421,399
2000 Race / Ethnicity Distribution*				
White	93.0%	94.8%	94.5%	86.8%
Black	0.0%	0.2%	0.2%	1.7%
American Indian	1.3%	0.8%	0.9%	1.2%
Asian/ Pacific Islander	0.4%	0.8%	0.7%	3.1%
Hispanic	5.6%	3.7%	4.0%	8.0%
Other	3.8%	1.4%	1.7%	4.2%
2000 Age Distribution				
0 – 17	26.6%	24.8%	25.1%	24.8%
18 – 64	58.7%	62.1%	61.6%	62.8%
65+	14.7%	13.1%	13.3%	12.8%

*NOTE: The six percentages may add to more than 100 percent because individuals may have reported more than one race/ ethnicity.

SOURCE: Portland State University (2003) and U.S. Census Bureau (2001).

Table 3-4 Population Forecast

State/County	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
Oregon	3,132,000	3,406,000	3,631,000	3,857,000	4,091,000	4,326,000	4,556,000	4,776,000	4,988,000	5,193,000
Both Counties	109,800	130,014	151,491	171,445	189,123	205,126	216,279	224,571	231,129	236,641
Crook County	15,700	17,168	18,662	20,215	21,892	23,678	25,582	27,567	29,634	31,752
Deschutes County	94,100	*116,600	*145,651	*170,945	*194,588	*218,760	*243,197	197,004	201,495	204,889
State/County (% Growth)		95-00	00-05	05-10	10-15	15-20	20-25	25-30	30-35	35-40
Oregon		9%	7%	6%	6%	6%	5%	5%	4%	4%
Both Counties		15%	14%	12%	9%	8%	5%	4%	3%	2%
Crook County		9%	9%	8%	8%	8%	8%	8%	7%	7%
Deschutes County		20%	18%	14%	11%	9%	5%	3%	2%	2%
SOURCE: Oregon Department of Administrative Services (2003), * Updated 2000 – 2025 Data from Deschutes County May 27, 2004 Draft										

Age

About 61 percent of the population of Crook and Deschutes Counties is working age (age 18 to 64), 25 percent is age 17 and under, and 13 percent is age 65 and over (Table 3-3). The median age is 38.6 for Crook County and 38.3 for Deschutes County, both higher than the median age in Oregon (36.3) and the nation (35.3). This may be due to the attraction of the area to retirees (such as La Pine, where the median age is 44.7 [BLM, 2001a]) and the general trend of population growth due to in-migration rather than an increase in area births over deaths (Deschutes County Community Development Department, 2003).

Income

The U.S. Department of Commerce, Bureau of Economic Analysis (BEA) estimates that earnings (such as wages and salaries) and dividends accounted for 60.3 percent and 26.5 percent, respectively, of the region's total personal income in 2000. By comparison, statewide earnings and dividends accounted for 65.7 percent and 21 percent of total personal income. Transfer payments (such as unemployment or social security payments) were about the same for the region and the state (Bureau of Economic Analysis, 2003). The higher proportion of dividend income by regional residents may reflect a relatively wealthy retiree and in-migrating baby-boomer population in the region as compared to the state as a whole.

According to the COCIP, inflation-adjusted per capita personal income experienced an increase equal to that of the overall Oregon economy for the last 10 years in Deschutes and Crook Counties (COIC, 2002). Deschutes County has the highest per capita income in the region, and in 2000, Deschutes County had the 5th highest per capita income in the state (\$26,594 for the County compared to \$27,836 for the state). Crook County dropped from 22nd statewide in 1990 to 29th in 2000 (\$20,264), due in part, the COCIP reports, to the decline in the wood products industry (COIC, 2002; Bureau of Economic Analysis, 2003). The COCIP projects that, with the national economic downturn, per capita income rates in Central Oregon are in danger of showing a decline for the first time since the early 1980s.

Poverty

While the relative percentage of white residents in Crook and Deschutes Counties has decreased by a slight 1.41 percent and 0.96 percent respectively since 1990, Census data shows that the poverty rate has also decreased for these residents during the same time frame, by 1.13 percent and 2.5 percent also respectively. This reveals that for Crook County poverty is increasing in the white population while for Deschutes County the poverty rate is decreasing for the white population (see Tables 3-5 and 3-6 below).

Census data reveals that the opposite holds true for the non-white residents in both Crook and Deschutes Counties. The relative percentage of the non-white population has increased by 5.51 percent and 2.66 percent respectively since 1990 while poverty has increased by 2.3 percent for Crook County and 1.16 percent for Deschutes County. While the net percent changes are slight for both counties, the numbers show that poverty is increasing more in the non-white population than in the white population and also that the increase in poverty since 1990 is greater in Crook County than Deschutes County.

Housing

According to the COCIP, Deschutes County is the most expensive area in which to purchase a new house in or adjacent to the planning area. The average sales price for a residential house in 2000 was \$194,953 in Bend; \$122,982 in Redmond; \$100,517 in La Pine; and \$99,196 in Crook County. The COCIP also reports that Crook County experienced a notable increase in the number of building permits issued in 2000 (after decreasing by 13 percent the previous year); but that new permits slowed in 1999 and 2000 for Deschutes County, where new permit acquisition was strong in 1997 and 1998.

Table 3-5 Crook County Poverty Statistics By Ethnicity/Race Distribution

Race/Ethnicity	Race/ Ethnicity Distribution 1990	Race/ Ethnicity Distribution 2000	10-Year Net Change	% Below Poverty within Race/ Ethnicity 1990	% Below Poverty within Race/ Ethnicity 2000	10-Year Net Change	% Below Poverty compared to Total Population 1990	% Below Poverty compared to Total Population 2000	10-Year Net Change
White	94.41%	93.00%	-1.41%	10.19%	9.59%	-0.60%	9.72%	8.59%	-1.13%
Black	0.08%	0.00%	-0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
American Indian, Eskimo, or Aleut	2.17%	1.30%	-0.87%	36.89%	47.71%	10.82%	0.81%	0.54%	-0.27%
Asian or Pacific Islander	0.09%	0.40%	0.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hispanic	2.46%	5.60%	3.14%	25.07%	37.02%	11.95%	0.62%	1.99%	1.37%
Other	0.79%	3.80%	3.01%	46.02%	41.29%	-4.73%	0.37%	1.57%	1.20%
Total							11.52%	12.69%	1.17%
Total White			-1.41%				9.72%	8.59%	-1.13%
Total Non-White			5.51%				1.80%	4.10%	2.30%

*Poverty Statistics by Ethnicity/Race Distribution result in a higher total than those reported as the sum for the entire county due to addition.

Table 3-6 Deschutes County Poverty Statistics By Ethnicity/Race Distribution

Race/Ethnicity	Race/ Ethnicity Distri- bution 1990	Race/ Ethnicity Distri- bution 2000	10-Year Net Change	% Below Poverty within Race/ Ethnicity 1990	% Below Poverty within Race/ Ethnicity 2000	10-Year Net Change	% Below Poverty compared to Total Population 1990	% Below Poverty compared to Total Population 2000	10-Year Net Change
White	95.76%	94.80%	-0.96%	10.80%	8.68%	-2.12%	10.49%	7.99%	-2.50%
Black	0.13%	0.20%	0.07%	22.22%	42.48%	20.26%	0.03%	0.10%	0.07%
American Indian, Eskimo, or Aleut	1.20%	0.80%	-0.40%	17.70%	25.91%	8.21%	0.21%	0.22%	0.01%
Asian or Pacific Islander	0.63%	0.80%	0.17%	3.50%	8.55%	5.05%	0.02%	0.05%	0.03%
Hispanic	1.89%	3.70%	1.81%	9.15%	19.52%	10.37%	0.17%	0.73%	0.56%
Other	0.39%	1.40%	1.01%	13.75%	15.67%	1.92%	0.05%	0.54%	0.49%
Total							10.97%	9.63%	-1.34%
Total White			-0.96%				10.49%	7.99%	-2.50%
Total Non-White			2.66%				0.48%	1.64%	1.16%

*Poverty Statistics by Ethnicity / Race Distribution result in a higher total than those reported as the sum for the entire county due to addition.

While the exact dollar value may be difficult to quantify, open lands have been shown to boost property values for surrounding developed areas and:

- Provide agricultural jobs and sales;
- Form a link to an historic past
- Offer recreation opportunities;
- Provide habitat for native plants and wild animals;
- Replenish groundwater and act as a filter to improve water quality;
- Offer a scenic backdrop for a tourist economy; and
- Enhance the quality of life of area residents.

Proximity to BLM-administered lands is used in advertising for many of the newer residential areas and resorts in and near the planning area. Local real estate agents report that properties adjacent to BLM-administered lands sell for higher prices than similar properties that are not located next to BLM managed land (Korish, personal communication, 2003). Responses to a recent BLM survey indicate that residents felt that proximity to public land increased the value of their property, and 76 percent of survey respondents living immediately adjacent to BLM expressed this opinion (Community Planning Workshop, 2002).

Amenity Values

Amenities can be defined as qualities of a locality that make it an attractive place to live and work (Power, 1988). Examples include wildlife and flora, recreational areas, pristine or undisturbed wilderness, unique settlement patterns, agricultural or cultivated landscapes, historic sites, and social and cultural traditions — all of which can be found on BLM-administered lands within the planning area. Amenities provide utility to people through the direct consumption of specific aspects of land, natural resources, and/or human activity (OECD, 1994). Amenities are linked to a particular region and are immobile.

Amenity values provided to Central Oregon residents by proximity to BLM-administered lands include qualitative, and often subjective, measures such as diverse outdoor recreation opportunities, pleasant views, privacy, seclusion, and peace and quiet. Specific amenities associated with BLM-administered lands in the planning area include open vistas of distant Cascade Peaks and local buttes; a sense of historical continuity from cultural sites and ranching and agricultural landscapes; opportunities for wildlife viewing; scenic drives and highways; developed and undeveloped recreation options; and an escape and refuge from urban areas. As private lands in the area become developed, residents will increase their reliance on BLM-administered lands and public land managers to provide, maintain, and protect these amenities. Such features contribute to the overall quality of life in the planning area and are often listed as valuable features by residential and resort communities.

Managing Change

The USFS and BLM analyzed economic and social characteristics of 543 communities in 98 counties and six states in the Columbia River basin to aid in identifying communities they may be economically and socially vulnerable to shifts in the management of USFS and BLM-administered lands (USDA Forest Service and USDI Bureau of Land Management, 1998). Researchers analyzed all the communities to assess their geographic isolation from larger cities and their association with USFS and BLM-administered lands, and examined economic information for 423 of these communities to determine their degree of industry specialization. The study included Prineville in Crook County as well as Bend, Redmond, Sisters, Terrebonne, and Three Rivers in Deschutes County. The report concluded that it was difficult to establish the importance of federal land to the local economy as "...there are simply too many other variables affecting this relationship and these variables can change quickly. There are also private choices involved in how businesses plan for and rely on federal lands for materials and services."

Regional Economy

In this report, no attempt has been made to evaluate a measure of Gross Regional Product. Instead, the general economic welfare of the region is described and evaluated using secondary data, as presented below.

Revenue Sharing With Local Governments

Although public land is not subject to state or local property taxes, the state of Oregon and Crook and Deschutes Counties receive revenues from BLM-administered lands located within their boundaries through several federal programs aimed at fairly compensating states and counties. These programs include formulas for direct revenue sharing (through commodity use or sale of natural resources on federal lands) and payment in lieu of taxes (PILT). Table 3-7 presents revenue sharing figures for all BLM-administered lands in Crook and Deschutes Counties for mineral leasing, and Section 15 grazing leases (note, however, that revenues from these activities on lands within the planning area would be less than that shown in Table 3-7 because BLM-administered lands within the planning area are only a portion of BLM-administered lands within each county).

Revenues from the PILT program compensate Crook and Deschutes Counties for the non-taxable nature of federal lands within their borders. The PILT program provides Crook and Deschutes Counties up to \$0.75 per acre for entitlement lands within their boundaries; these amounts are reduced each year to a minimum of \$0.10 per acre by payments received by the county from various natural resource revenue sharing programs (mining, grazing, timber, etc.) in the previous year (Frewing-Runyon, personal communication, 2003a). For fiscal years 1999 to 2003, the Federal Government paid

Table 3-7 BLM Payments to Crook and Deschutes Counties, 1999 to 2001

Year	Payment	Crook County	Deschutes County
1999	Mineral leasing	\$207	\$1,987
2000	Mineral leasing	\$209	\$2,013
2001	Mineral leasing	\$104	\$1,076
1999	Sec. 15 Grazing leases	\$273	\$1,161
2000	Sec. 15 Grazing leases	\$272	\$304
2001	Sec. 15 Grazing leases	\$275	\$136

SOURCE: BLM (2001b).

an average of \$512,000 to Crook County and \$230,000 to Deschutes County under the PILT program for Federal lands managed in these counties. BLM's contribution is based roughly on the amount of BLM-administered lands within the county and is approximately 25 percent for each county. PILT figures shown for 1999 to 2003 below can be verified at <http://www.blm.gov/pilt/>.

YEAR	CROOK COUNTY	DESCHUTES COUNTY
2003	\$170,812.00	\$260,746.00
2002	\$824,141.00	\$348,437.00
2001	\$754,022.00	\$247,700.00
2000	\$468,849.00	\$151,324.00
1999	\$340,489.00	\$140,343.00

Industries

According to the Oregon Employment Department, Central Oregon experienced healthy job growth throughout most of its industry sectors in the 1990s. Only one sector, the lumber and wood products sector, experienced a decline (Oregon Employment Department, 2001). The region is experiencing an economic shift away from traditional commodity-based sectors such as timber, livestock, and agriculture, which have experienced substantial declines statewide. The rural community economies have resiliently shifted toward trades and service sectors fueled by recreation, tourism, and retirement incomes, and the influx of new residents is providing a diverse labor force to fuel this economic shift (Preister, 2000).

The COCIP reports that the nature of Central Oregon's wood products industry is changing, along with the statewide and regional decline in timber harvest over the last decade (Central Oregon Intergovernmental Council, 2002).

What once made up the majority of the area's manufacturing base (lumber and wood products) is declining in overall percentage and evolving into smaller, niche-market manufacturing companies. Lumber and wood products manufacturing accounted for 24 percent of non-farm employment in the year 2000 in Crook County and 39 percent in Deschutes County (Oregon Employment Department, 2001).

BLM employment and salaries are included in the government category in Table 3-8, but activities on BLM-administered lands also directly contribute to agriculture, manufacturing, and mining sectors. Although relatively small contributions compared

to other area lands and industries (as discussed in future sections of this document), BLM grazing leases, gravel pits, timber, and other forest products do contribute to the local economy. According to a recent BLM survey, 68 of the 667 survey respondents (10 percent) indicated that they relied on BLM-administered lands for economic gain (grazing, craft industries, forest products, etc.). Although no distinction was made between BLM-administered lands within the planning area and BLM-administered lands outside the planning area (Community Planning Workshop, 2002). Of all respondents, 11 (1.6 percent) indicated that they rely on BLM-administered land as their sole means of income (Community Planning Workshop, 2002).

Although no distinction is made between public and private lands, IMPLAN data estimates for Crook and Deschutes Counties show that livestock (for all animals, including range-fed and ranch-fed) accounts for about \$31.2 million of the agricultural sector's \$143.7 million in output and 944 of agricultural sector jobs. IMPLAN also estimates that the range-fed cattle sector generates about \$13.6 million dollars of output and 335 jobs are generated annually (MIG, Inc., 2000).

In both Crook and Deschutes Counties, employment in the service industry and retail trade is expected to outpace growth in other economic sectors through 2010 (COIC, 2002). Table 3-8 presents data on the relative importance of the major economic sectors on the regional economy, both in terms of economic output, employment and value added (value added being the total earnings and other income, such as indirect taxes, associated with a particular business sector). The importance of the trade and service sector to the region's economy is shown by the fact that these sectors account for more than half of the employment in the region. The major role also played by the finance / real estate and construction industries is clearly related to the past and on-going development occurring in the region.

Table 3-8. Economic Activity by Major Economic Sector for Deschutes and Crook Counties

	Industry Output (\$ millions)	Employment	Value Added (\$ millions)
Agriculture	143.7	3,906	100.1
Mining	36.6	91	20.9
Construction	1,066.7	8,936	386.2
Manufacturing	1,360.1	8,526	501.3
Transportation/ Communications/ Public Utilities	473.2	2,897	245.2
Trade	1,015.1	19,573	722.4
Financial/ Investment/ Real Estate	1,233.5	6,985	869.7
Services	1,417.4	24,603	790.7
Government	515.7	9,213	457.4
Other	-11.6	296	-11.6
Totals	7,253.4	85,026	4,082.5

NOTES: All figures adjusted into 2002 dollar terms using the Consumer Price Index – Urban. Industry output represents the dollar value of an industry's output. Value added represents the total earnings and other income associated with a business sector (employee compensation, proprietary income, other property income and indirect business taxes).

SOURCE: IMPLAN Input Output Model by MIG, Inc. for Deschutes and Crook Counties (MIG, Inc. 2000) and Environmental Science Associates.

Over the last 20 years, there has been a substantial increase in resort development within the two-county region. The combined effect of favorable economic and demographic trends has created increased demands for second home and resort development. Fueled by demographic shifts, wealth creation, and inheritance, the resort industry is forecast to be the fastest growing real estate market over the next 20 years (Hobson Ferrarini Associates, Inc., 2000).

The growth in local resort development has had both beneficial and adverse social and economic effects on the counties and other local communities. The increased population from the new housing stock both increases the local tax base and increases the demand on county and local services. According to the Deschutes County Economic Development Department, the past resort developments have generally had a major positive economic impact on the regional economy (Lee, personal communication, 2003). According to the Deschutes County Tax Assessor's Office, the combined real market value of the Sunriver Resort community in 2002 was about \$1,267 million, and it paid about \$12.1 million in property taxes to the county (Reynolds, personal communication, 2003). For the Black Butte Ranch resort community, its real market value was estimated to be about \$512 million and it paid \$5.7 million in combined property taxes to the county. Resort developments also generate many jobs for the region (although most are relatively low-paying service sector positions). The Deschutes County Economic Development Department estimates that the major resorts (including Mt. Bachelor Ski Resort) directly employ nearly 3,200 employees.

While numerous factors contribute to the location and success of destination resorts (land availability, quality of construction and amenities, etc.), the open space and scenic quality surrounding the resorts are considered to be additional factors attracting visitors and residents to the resorts. As a result, BLM-administered lands contribute toward the success of these developments. While the majority of the recreational facilities used by resort guests or residents are located within the resort property, some resort users and residents may be expected to use adjoining BLM recreational resources.

Tourism and recreation are important sources of revenue for the region. The area's magnificent scenery and clean environment, as well as varied recreation locations and opportunities, has made it a popular year-round vacation area. Dean Runyon and Associates estimates that tourism spending within the two-county region exceeded more than \$375 million — with Deschutes County ranking 5th in the state in terms of highest total tourism related spending (Dean Runyon and Associates, 2002). The report also estimates that tourism accounted for more than 6,600 jobs in the region.

Deschutes County annual transient room tax revenues were \$5.22 million (for incorporated areas) and \$3.0 million for the unincorporated sections of the county in 2002. Based on an average tax rate of 7 percent (and an 8 percent tax rate for Bend), it is estimated that there were about nearly \$71.5 million in total lodging sales in Deschutes County. In comparison, during the same period, Crook County collected only \$110,000 in transient room tax revenues.

According to the Deschutes County Treasurer's Office and Economic Development Department, resort developments have become an increasingly important component of the region's economy over the last 20 years and are expected to remain so for the foreseeable future (Circle, personal communication and Lee, personal communication, 2003). The Treasurer's office estimated that more than 80 percent of the County's estimated \$3.0 million in transient room tax revenues were generated from lodging on properties that were part of the Sunriver, Black Butte, or Eagle Crest Resorts. According to the Deschutes County Tax Assessor's Office, three of the top six tax payers in the County are Eagle Crest Resort, Sunriver Resort, and Mt. Bachelor, Inc. (the ski resort is

considered a major recreational and resort amenity). These tourism businesses have a combined real market value estimated to be over \$121 million (not including the value of properties sold by the resort to private owners).

Labor Force

IMPLAN reports that full and part-time employees (including self-employed) equal about 85,000 in Deschutes and Crook counties.

Unemployment in Central Oregon hit a 30-year low in 2000, but as a result of the slowing economy in 2001, rose again to 7.4 percent by November of 2001 (the highest since July 1993) (COIC, 2002). The Oregon Employment Department attributes the higher unemployment rates in Central Oregon (relative to the rate for the entire state of Oregon) to three factors: 1) the decline of the lumber and wood products sector; 2) high job growth in seasonal non-manufacturing sectors; and 3) accelerated growth in the region's population (COIC, 2002).

Crook County unemployment rates are the highest and most volatile in the region, but unemployment rates for both Crook and Deschutes Counties have consistently been higher than the rates for the entire state. Despite these high unemployment rates, the actual number of people employed has grown considerably between 1994 and 2000, with 17,471 new jobs created in Deschutes County and 1,061 new jobs in Crook County (COIC, 2002).

Infrastructure

Five general aviation airports are located in Crook and Deschutes Counties. They include the Prineville Airport, Roberts Field in Redmond, Bend Municipal, Sunriver Airport, and Sisters Eagle Air. Roberts Field, owned and operated by the City of Redmond, is the only commercial airport with regularly scheduled passenger service in Crook and Deschutes Counties (and the planning area). Roberts Field is an important asset to the tourism industry in Crook and Deschutes Counties, especially for attracting out-of-area visitors. Regularly scheduled flights from Roberts Field to Portland, Seattle, and San Francisco allow travelers to connect to worldwide destinations. Enplanement data show steadily increasing numbers since 1994, except from 2000 to 2001, which may be due, in part, to the events of September 11, 2001. Enplanements in 2000 totaled 161,680 and 158,670 in 2001 (COIC, 2002). BLM-administered lands near the airport also may be viewed as a potentially important resource to allow for future airport expansion or development of near-airport commercial, industrial, and public facilities.

Additional infrastructure is described under Transportation and Utility Corridors in this Chapter.

Issue Based Descriptions of the Affected Environment

Ecosystem

An ecosystem is a complete interacting community of living organisms and the abiotic components that make up their environment. An ecosystem can be something as small and discrete as a pond or a single log, or it can be the entire earth's biosphere. The purpose of ecosystem management is to maintain the integrity of ecosystems over time and space. Ecosystems are dynamic, and are constantly changing with or without human influence. Ecosystems have biophysical limits, which are sometimes at odds with social expectations, and there are limits to our ability to accurately predict how things may change (USDA Forest Service, 1996b).

The Interior Columbia Basin Integrated Scientific Assessment studied historical and current ecological conditions at a broad scale. At the sub-basin scale, the Upper Deschutes planning area, along with much of the Interior Columbia Basin, was shown to have "low composite ecological integrity" based on disturbance to expected vegetative patterns and composition, altered hydrologic function, presence of exotic species, and changes to historic disturbance relationships in the forestlands, rangelands, hydrologic systems, aquatic character, and terrestrial species habitat (USFS, 1996). This composite rating emphasizes ecological process and function, rating human altered systems lower, although they may or may not be productive and be meeting social expectations.

Vegetation

This section describes the broad vegetative types within the planning area, including important features and trends of each. The ecological role of disturbances, both natural and human caused, will be discussed. Special status plants and noxious weeds, although occurring in all the vegetative community types, will be described under separate subsections.

Vegetative condition is described in general terms, primarily as affected by various land use activities and natural processes, such as fire exclusion, juniper expansion, and human settlement. Additional information on native vegetation condition and how major plant community groups and habitats are changing is described in Chapter 4 – Environmental Consequences. These descriptions are not intended to be Site-specific for each geographic area, each allotment, or each individual plant community. The BLM possesses current, more detailed vegetative condition/inventory information (although incomplete), based on site-specific areas such as grazing allotments or past project areas. Because vegetative condition and structure is dynamic, and due to the broad scale of this RMP analysis (over 400,000 acres), this information is not presented here. Our current, most comprehensive means of collecting site-specific information is through field assessments according to the Standards for Rangeland Health and Guidelines for Grazing Management. These assessments are currently being conducted for each allotment and are due to be completed for the District by 2008. This information is available for review at the Prineville District Office.

The planning area lies on the eastern shoulders of the Cascade Range in a broad vegetative transition zone, along a precipitation gradient between forested ecosystems on the west and the high, dry shrub-steppe environment common to the Great Basin. The planning area may be characterized by several major distinct vegetative community types (See DEIS Map 4: Vegetation Types and Table 3-9). The northern area is primarily a mosaic of juniper woodland and sagebrush/grassland, while the La Pine area is

dominated by lodgepole pine forest with bitterbrush in the understory. Ponderosa pine dominates the overstory in small areas in both the La Pine and northern portion of the planning area where the vegetation transitions between mixed conifer and juniper woodland. Riparian plant communities lining the rivers, creeks, and irrigation canals are relatively minor in terms of total acres in the planning area, but extremely important as wildlife habitat and popular for recreational use.

Disturbance Relationships

Disturbance relationships are important because ecosystem properties are often regulated by the type, severity, size, and frequency of the disturbances that occur. Individual plant communities align themselves according to soil properties and available precipitation in a moisture limited environment, but the composition and arrangement of the individual plant communities are also influenced by the presence or absence of natural and human caused disturbances.

Natural disturbances include wildland fire, drought, wind, and climate anomalies. The presence of insects and pathogens following a disturbance is also a factor in, or a symptom of, many of the forest health issues currently being experienced in the west. The La Pine area, in particular, has been severely altered by a variety of disturbance factors including insects and disease, wind, drought, fire (including fire exclusion), and human activities. The interaction of fire exclusion, insects and disease, logging, and a proliferation of lodgepole seedlings, saplings and bitterbrush has created pressing concerns for wildland fire hazard and ecosystem health in the La Pine area.

Of the human-caused disturbances, some are caused by the direct disruption of plant communities during activities such as logging, juniper thinning, prescribed fire, livestock grazing, off-road travel, and road construction. Others are caused by unplanned human activities such as wildland fire. Human ignitions have accounted for 81 percent of the 62 fires within the past 20 years in the La Pine area and 19 percent of the 685 ignitions in the northern portion of the planning area. Finally some disturbances are caused by human activities inhibiting natural disturbances such as suppression of wildland fire. Roads also act as fire breaks, further changing the environment in which fire can burn. Grazing can reduce the amount of available fine fuel in which fire can burn, a shift in the inherent disturbance regime. These human disruptions of the natural fire regime result in increased fuel loading, shifts in species composition and abundance, and an overall increase in fire severity when a wildland fire does occur.

Table 3-9 Vegetative Types in the Upper Deschutes Planning Area

Vegetative Group	BLM Acres	Total Acres in Planning Area	BLM Acres(%)	Total Acres, All Ownerships(%)
Shrub	213,654	362,362	52.3	41.0
Juniper	132,969	278,647	32.5	31.5
Pine	26,787	76,571	6.6	8.7
Grass	19,565	62,547	4.8	7.1
Ag/Riparian/Meadow	12,008	87,494	2.9	9.9
Non Vegetated	3,399	11,959	.8	1.4
Mixed Conifer	513	4,147	.1	.5
TOTALS	408,895	883,727	100	100

Shrub-Steppe Communities

Shrub-steppe and western juniper communities are the most prevalent within the northern portion of the planning area (the planning area excluding the La Pine area), as well as throughout Central Oregon. The term “shrub-steppe” refers to the complex of plant communities that are dominated by shrub and grass species in various proportions, usually occurring in the more xeric sites. The shrub-steppe and juniper woodland vegetative types comprise 90 percent (366,370 acres) of the BLM-administered lands in the northern portion of the area. The juniper woodland communities are similar in composition to the shrub-steppe communities, differing primarily only in the presence of the western juniper tree overstory. For the purposes of discussion in this section, the two communities will be described separately. The shrub-steppe discussion will focus on the shrub, grass, and forb components. Occasionally, the term “savanna” will be used when referring to the shrub-steppe type with a component of juniper. In a savanna, the juniper is widely scattered (less than 10 percent crown cover) and occupies a subordinate role to the shrubs and grasses. In a juniper “woodland,” juniper occurs at a density of 10 percent canopy cover or greater, and is in a dominant or co-dominant position within the plant community. The juniper woodland discussion will focus on the tree component, and will further discuss the dynamics of juniper occupation and describe the stands of old-growth juniper present in the planning area.

Sagebrush or western juniper dominate most plant communities in the northern planning area. There are several sagebrush species in the planning area, each of which characterizes particular habitats. The two most important sagebrush communities in the planning area are the big sagebrush and low sagebrush communities.

Big Sagebrush

This plant community includes mountain big sagebrush, Wyoming big sagebrush, and basin big sagebrush as the dominant shrubs, with mountain big sagebrush as the most widespread. Big sagebrush communities dominate the shrub layer on approximately 90 percent (329,730 acres) of the shrub-steppe/woodland vegetative type in a wide variety of mixed plant association mosaics. Big sagebrush crown cover is generally within the range of 10-30 percent. Basin big sagebrush grows on sites having moderately deep, well-drained loamy soils such as those occurring on droughty bottomlands and fans. Wyoming big sagebrush is present throughout the uplands of the shrub-steppe vegetative type on slightly more sandy or gravelly soils. Mountain big sagebrush generally occurs at higher elevations than basin big or Wyoming big sagebrush, dominating on sites above 4,200 feet in gravelly or stony soils. Mountain big sagebrush often mixes with Wyoming big sagebrush, particularly in the pumice zone on the western portion of the northern area. Mountain big sagebrush occasionally includes low sagebrush on some of the stony flat “scabs.”

Few trees occur on mountain big sagebrush sites while juniper and ponderosa pine can be common on the more mesic and lower elevation basin and Wyoming big sagebrush sites. Juniper overstories can attain up to 40 percent crown cover over big sagebrush communities. Pine occurs in isolated groups and at the northwest edge of the northern area.

Antelope bitterbrush is also often a component on the more mesic sites, particularly on the west edge of the northern area, the Skeleton area, and South Millican area. In these areas, bitterbrush can be dominant or co-dominant with big sagebrush. Green and gray rabbitbrush also often occur in association with big sagebrush. Rabbitbrush is an early seral species, with the greatest occurrence on disturbed sites.

Grass and forb associations with big sagebrush vary widely, depending on the specific site. The presence of native grasses can range from a mere presence to an abundance,

depending on soil/water relations, historical disturbances, and amounts/types of competing vegetation such as exotics, sagebrush, and conifers. The grass component is generally dominated by bluebunch wheatgrass, Idaho fescue, or needlegrass. Idaho fescue generally increases as one moves north and west in the planning area toward a lower elevation and greater soil moisture gradient. Idaho fescue also favors north slopes and, on deeper soils, the shade of tree canopies. Western needlegrass is dominant at the higher elevations and where soils are sandier. Other grasses occurring in association with big sagebrush communities include needle and thread grass, Thurber's needlegrass, Sandberg's bluegrass, bottlebrush squirreltail, Junegrass, and Great Basin wildrye.

Introduced grasses are primarily cheatgrass and crested wheatgrass. Approximately 6,400 acres of public land within the planning area were seeded with crested wheatgrass in the 1950s-70s. Crested wheatgrass was seeded to stabilize soil, help displace undesirable species, and increase forage production for livestock and wildlife. Introduced from Eurasia, crested wheatgrass is well adapted to the local climate and soils and many seeded areas still support varying densities of this species. After about 10 years, big sagebrush and rabbitbrush begin to re-establish within crested wheatgrass seedings.

Forbs are a minor component in big sagebrush communities, usually comprising less than 2 percent in an area. Near Bend, where the sandy soils are deeper, there is a greater frequency of species such as Douglas' false-yarrow, Oregon sunshine, and lineleaf phacelia. As soils lose depth and become rockier, as is common at the higher elevations and scab flats, various milkvetches, balsamroot, and Columbia puccoon increase in frequency. Various species of buckwheat, lupine, and milkvetches are common throughout the area. Other common forbs include common yarrow, Lewis' flax, Nutall's larkspur, granite gilia, wooly groundsel, rockcress, phlox, aster, and paintbrush. Biological crusts, though inconspicuous, are important to the ecological integrity of some sites (see Soils section for more discussion of biological crusts).

Low sagebrush

Low sagebrush communities occur on approximately 8 percent (29,310 acres) of the woodland/ shrub-steppe vegetative type within the planning area. This community is strongly dominant on upland shallow, stony, basalt-derived soils, but can also grow mixed with other sagebrush species on moderately deep, gravelly mountain soils. Low sagebrush typically has less than 10 percent crown cover and has a much lower growth form (4-16 inches) than big sagebrush. Low sagebrush is the dominant plant, and often the only shrub found in the community. Few trees are found on low sagebrush sites. Sandberg's bluegrass is often the dominant grass. Other common associate grasses are bluebunch wheatgrass and Idaho fescue. Common forbs include Hood's phlox, prairie lupine, lineleaf fleabane, false agoseris, bighead clover, and various species of biscuitroots and buckwheats. Low sagebrush sites usually do not form extensive landscape-level covers but, rather, are part of the larger big sagebrush mosaics. The sites have extensive areas of exposed rock with a very sparse total vegetative cover.

Most sagebrush communities are adapted to the passage of periodic fire. Fire in the unmanaged sagebrush ecosystem would have burned at intervals between 25 and 100 years, depending upon the availability of fine fuels and grasses to carry fire in this vegetative type (Wright & Bailey, 1982). The amount of grass and other vegetation to help carry fire is directly related to the amount of moisture available. Thus the drier sites occupied by drought tolerant Wyoming big sagebrush and low sagebrush tend to have the least frequent fire return interval (100 years or more between fires) due to the lack of fine fuels that could carry fire in low wind situations. The more mesic mountain big sagebrush is more likely to be growing in the company of continuous grass and forb species that can carry fire. Fire return intervals in those ecosystems would be expected to be closer to 25 to 30 years.

We suspect that fire exclusion has played a role in the arrangement, vigor, and distribution of seral stage classes of these sagebrush communities, resulting in an overall loss of heterogeneity. A homogeneous ecosystem consisting of mature sagebrush across a broad area is more prone to larger fires, and the post burn environment is less apt to provide a mosaic of habitat opportunities for wildlife.

Two potential scenarios result from interruption of the natural fire cycle. One prevalent trend in the planning area is for sagebrush stands to become dense and unproductive, with few grasses in the understory and a high ratio of dead to live crown in the sagebrush. Juniper often becomes established as the loss of grasses makes the passage of fire less likely and an increase of sagebrush improves the micro-climatic environment for juniper seedlings. If the native perennial grass and forb component is lost and a severe fire does occur, then, lacking a native seed source, the risk for exotic species (such as cheatgrass and noxious weeds) dominance becomes quite high.

Another potential trend, less frequent but existing in the planning area, is for a non-native grass like cheatgrass to become established in the stand. Cheatgrass is extremely flammable, and some stands actually burn with much greater frequency, as often as every year or two. This cheatgrass-fire cycle is difficult to remedy once it has started. One successful treatment has been winter/early spring livestock grazing to selectively reduce cheatgrass that has germinated the previous fall.

Western Juniper Communities

The western juniper woodlands are the driest of all tree-dominated zones in the Pacific Northwest (USDA Forest Service, 1973). The range of western juniper extends throughout much of central and eastern Oregon and into other parts of the Great Basin. Juniper woodlands in Central Oregon are within the transition zone between the ponderosa pine forest on the east slope of the Cascades and the high desert shrub-steppe zone to the south and east. Juniper-dominated plant communities cover approximately 33 percent of the northern planning area, almost always in association with the big sagebrush shrub-steppe vegetative type. In this context, juniper “dominance” refers to areas where juniper density (crown cover) is 10 percent or greater. Juniper density on these sites generally ranges from 10-40 percent, depending on site characteristics and past disturbances such as wildland fire, prescribed burning, juniper thinning projects, old homestead clearings, personal-use and commercial firewood sales, and illegal firewood cutting. Plant species that grow between and underneath the juniper are generally the same as those that grow in the shrub-steppe (see description of shrubs, grasses, and forbs in the Shrub-Steppe section).

The range and density of western juniper has been expanding and contracting over many thousands of years. Most of this natural fluctuation was in response to climatic and geologic events. During the past 130 years, however, western juniper has been expanding at unprecedented rates compared to any other time period during the Holocene (Miller and Wigand 1994). In much of its range, western juniper has been estimated to have increased 10 fold in the last 130 years in the intermountain west (Miller and Rose. 1999). The expansion is still in progress and juniper has the potential to occupy far more additional area (Miller 1995b). Juniper is encroaching into a wide variety of sites and soil types. Within the planning area, juniper expansion has been noted in grasslands, shrub-steppe, savanna, ponderosa pine forest, and riparian areas.

Most of the literature attributes this latest expansion in range and density of western juniper to four major factors: changes in climate, introduction of livestock, increases in CO₂, and the reduction of fire.

Climate: From 1850 to 1916, winters became milder and precipitation was greater than the current long-term average in much of the Great Basin (Graumlich 1987). This period

of wetter and milder climate coincides with the onset of juniper expansion throughout most of its range. Above average precipitation and warmer temperatures are favorable to the establishment and growth of juniper.

Livestock: Livestock were introduced to the west in the mid-1800s and numbers expanded greatly from the 1870s to early 1900s. Overgrazing by large numbers of domestic cattle and sheep drastically reduced the continuity of fine fuels (grasses) that were necessary to carry fire through shrub-steppe plant communities. Fire occurrence and fire size declined dramatically beginning in the late 1800s. A reduction in fire and a lack of competition from grasses allowed shrubs and juniper to emerge as dominant/co-dominants. Shrubs further facilitated juniper establishment by providing a sheltered, protective environment for juniper seedlings.

Atmospheric CO₂: Rising levels of atmospheric CO₂ have been reported to increase the growth of woody species throughout the west (Knapp and Soule 1999). Most of the additional CO₂ produced has been a result of industrial emissions and combustion of fossil fuels. A positive correlation has been shown between accelerated juniper sapwood growth and elevated levels of CO₂ in the atmosphere during the second half of the 20th century. Increased sapwood growth would also translate to increased crown size, foliage and biomass production in general.

Fire: Regular occurrence of fire sparked by lightning or Native American burning is considered to have been the most important factor limiting juniper density and expansion into shrub-steppe plant communities during pre-European settlement times. Public fire suppression policy, displacement of Native Americans, and removal of fine fuels by intensive grazing combined to reduce the frequency and size of fires on the western landscape. Young juniper is easily killed by fire. Lack of fire allowed juniper to expand into shrub-steppe and sagebrush/juniper to expand into grass-dominated communities.

Western juniper is a highly competitive and invasive species (Rose and Eddleman, 1994). In the absence of fire, juniper has the ability to out-compete other plant species for limited soil moisture and nutrients. This long-lived species can transpire and grow during mild periods in the winter and early spring on unfrozen soils when other vegetation is dormant. Western juniper does not sprout (Burkhardt and Tisdale, 1976). Reestablishment is through seed that is dispersed fairly slowly by water and animals.

Where fire returns frequently, juniper is a minor component in the plant community, existing in rocky areas or other places unlikely to burn. However, in the pumice flats of Central Oregon, fire played a lesser role, and juniper is much more prevalent. Juniper is poorly adapted to survive the passage of fire. Young junipers have thin bark and are readily killed by surface fires. In general, the taller the juniper, the greater the severity of the fire required to kill it (USDA Forest Service, 1978). Fire return intervals in western juniper communities range from 7 to 25 years to more than 100 years. Mean fire interval for western juniper within the Columbia River Basin is estimated at 52 years (USDA Forest Service, 1997a). European settler practices of fire suppression and grazing have resulted in a reduced natural ability of these sites to carry fire and, therefore, has lengthened fire return intervals.

Juniper seed dispersal occurs via gravity, overland water flow, and animals. Birds, as a group, are the most important disseminator of juniper seed. At least 12 species of birds feed on juniper berries (Maser and Gashwiler 1978). American robin and Townsend's solitaire often winter in juniper woodlands, consuming the female cones as a major source of sustenance. Townsend's solitaires can ingest over 80 berries per day. Mountain bluebirds, cedar waxwings, Steller's jays, and scrub jays have also been observed consuming juniper berries. Bird digestion does not destroy the seeds contained within berries. Seed is excreted, often underneath perches of shrub, trees, or fence posts. These

perching structures also serve as beneficial protective cover for the emerging juniper seedlings, thus increasing the chance of establishment. Mammals such as coyotes, cottontails, rodents, and mule deer also consume juniper berries but are probably not as effective at distributing juniper seed as are birds.

Post-settlement juniper dominance of some sites can cause alterations to watershed function and ecosystem health. Local research and monitoring has demonstrated some of the implications of juniper dominance for a variety of ecological and physical processes and values. Some of the ecosystem components/processes affected include: vegetation and wildlife species composition and diversity; bio-mass production; invertebrate and biological changes; water interception, infiltration and runoff; soil temperature; and freeze/thaw processes.

Juniper is effective in using available moisture and uses water very early in the spring before other plants begin to grow. On a warm April day, individual trees can use up to 20 gallons per day. In a dense juniper stand, this water use represents a majority of the annual precipitation on a typical Central Oregon site. On juniper sites, soil moisture is often limiting for most perennial plants by June 15; whereas on sites without juniper, soil moisture is often available into August. On sites in Central Oregon, interception loss from the canopy cover was as high as 20 percent or two inches per year in a 10-inch precipitation zone (Eddleman and Miller 1991). Anecdotal information also suggests that juniper site dominance can change groundwater recharge capability; the timing, intensity and duration of stream runoff events; and total watershed water production and storage. Monitoring indicates that these kinds of effects occur in many juniper-occupied sites within the planning area.

Significant loss of shrub-steppe habitat quality has occurred from expansion of juniper and increases in sagebrush age and density. Historically, many upland sites in the north planning area were treeless grass and shrub communities or savannas containing a higher proportion of grass and widely dispersed trees. Local research and monitoring studies, rangeland health assessments, and other information dating back to the 1880s suggest a trend toward increasing dominance of woody species on formerly graminoid (grasses, sedges, rushes) dominated sites. Such woody species include western juniper, ponderosa pine, sagebrush, and rabbitbrush. Monitoring has also indicated that when post-settlement juniper and shrub cover/density is reduced (and appropriate post-treatment practices are applied), understory grass and forb cover/density, soil stability, and other desired ecological attributes can increase in quality and quantity. Shrub habitat can also improve with natural disturbance or treatment by becoming more diverse in age class, structure, distribution, and density. Successful treatment techniques that have been applied in the planning area to help reverse the trend toward expanding woody species dominance include prescribed burning, cutting, and altering livestock grazing schedules. Nevertheless, research in other areas of the west studying the effects of juniper and pinyon-juniper occupation on ecosystem health and functioning has resulted in differing viewpoints, conclusions, and recommendations.

Old-Growth Juniper Woodlands

The western juniper woodlands are often treated and discussed in general terms as a single vegetation type. In reality, there are many plant associations within the western juniper association group. Driscoll (1964) has classified nine relatively undisturbed plant associations and variants of two associations in the Central Oregon juniper zone. These juniper associations are representative of "climax" types, that is, as these plant communities approach their latter stages of successional development, western juniper is often present as a dominant component. Juniper often attains a great age on some of these sites. This stage of juniper development is often referred to as "old-growth woodlands."

Approximately 34 percent (139,000 acres) of the planning area contains old-growth juniper woodlands (see DEIS Map 4: Vegetation Types). The literature generally agrees that old-growth juniper is defined as juniper that was present before the migration of white European settlers into the region beginning in the mid- to late-1800s (i.e., trees greater than 150 years of age). This “pre-settlement” or old-growth juniper occurs in large contiguous stands in the Cline Buttes, Alfalfa, Badlands, Horse Ridge, and Millican/West Butte Road areas. Many of the dominant trees in these stands are much older than 150 years, some approaching 1,000 years of age. The oldest tree in Oregon, a western juniper tree located within the planning area, was recently documented to be over 1,600 years old. Within the range of western juniper, it is estimated that 3-5 percent of the current 8 million acres of woodlands are characterized by trees greater than 100 years old (BLM 1990). Some of the physical characteristics of old juniper trees include: large diameter trunk (often twisted) and lower limbs, rounded or irregular crown, deeply furrowed, reddish stringy bark, broken and dead branches, heart rot, cavities, and abundant lichen growth. Old-growth stands are usually in an uneven-aged structure with younger trees occurring in disturbance areas and in interspaced areas between the older trees. Central Oregon old-growth juniper has not been formally rated according to ecological significance criteria such as those developed for other tree species (i.e., USFS Region 6 Interim Old-Growth Definitions, Bill Hopkins, 1992).

Because many of these trees were already old centuries before European settlement, they are considered to be an integral part of the native Central Oregon landscape; compared to the recently established post-settlement juniper type, which is more a manifestation of recent human and climatic influences. Therefore, old-growth juniper in this document will be considered in a different context than the younger juniper that have expanded into and adjacent to the old-growth stands. These old trees provide a variety of non-tangible values such as special wildlife habitat, interpretive/educational opportunities, high scenic values, and preservation of natural gene pools. Relatively healthy old woodlands exist within the planning area, but these areas are also being impacted over time by cumulative ground disturbance and illegal activities. Some old-growth stands are also increasing in tree density due to young juniper establishing in the interspace between the older trees and displacing understory shrubs, grasses, and forbs.

The large size and age of juniper in Central Oregon is probably due to several environmental factors. The area has moderately deep pumice soils, more available subsurface soil moisture, and relatively few days during winter when soils are frozen compared to other western juniper sites in the high desert region. These factors allow juniper to out-compete other associated species on these sites. Fire may also play a factor on these sites. Low rainfall results in less fine fuels to carry fire. The flat to gently rolling topography also makes it more difficult for the spread of large, intense wildland fires. Larger trees have a tendency to “fireproof” themselves by creating a zone of sparse vegetation around them through competition and release of growth inhibitors. Older trees with thicker bark are described as “moderately resistant” to fire (USDA Forest Service, 1965). Control of natural fires and overgrazing with the arrival of white settlers also limited the ecological role of fire in controlling the age and extent of juniper stands in Central Oregon.

Healthy old juniper woodlands can be characterized as having a high proportion of native plants that are diverse and well distributed across the site, a healthy and vigorous understory with a low proportion of young juniper trees, low cover of non-native and annual plant species, a healthy component of biological soil crusts, and a low level of physical ground disturbance. These sites contain a complementary healthy and diverse population of wildlife species. Relatively healthy old juniper woodlands exist within the planning area, but these areas are also being impacted over time by cumulative ground disturbance and illegal activities. Some old-growth stands are also increasing in tree density due to young juniper establishing in the interspace between the older trees and displacing understory shrubs, grasses, and forbs.

Increasing urban development and human activities have fragmented old-growth juniper woodlands in Central Oregon. The removal of old-growth trees from private land makes remaining old-growth juniper woodlands on BLM-administered lands more ecologically significant. Traditional public land uses such as cutting trees for firewood, off-road vehicle travel, military training exercises, clearing for road construction, and improper livestock grazing have contributed to the direct and indirect effects on these old-growth ecosystems. Hobbyists and furniture makers target these trees as a raw material source. These and other human activities, both legal and illegal, compromise the integrity of old-growth woodlands in Central Oregon.

Lodgepole Pine

Lodgepole pine plant communities are the dominant vegetative type in the La Pine Basin, comprising approximately 90 percent (36,121 acres) of the La Pine portion of the planning area. The most common plant community, by far, is the lodgepole-bitterbrush-Idaho fescue association. On some sites bottlebrush squirreltail and needlegrass are the dominant grasses, in association with lodgepole pine and bitterbrush. Other common understory plant species include wax currant, lupine, buttercup, western yarrow, strawberry, goosefoot violet, balsam groundsel, goldenweed, yellow salsify, silverleaf phacelia, kinnikinnick, and pinedrops.

The ecological status of lodgepole pine is typically that of a pioneer or invader species and is often replaced over time by other tree species such as ponderosa pine, grand fir, or Engelmann spruce. However, in much of the La Pine area, lodgepole pine is the climax tree species, meaning it persists over a long period of time and is not replaced by any other tree species in this environment. It thrives on disturbance and can establish quickly in an area disturbed by fire, wind throw, insects, or disease. This relatively short-lived tree species is dependent on disturbance for its regeneration and long-term stand health and vigor. Lodgepole pine is able to become established and grow where other trees cannot compete or survive. This prolific species can germinate and grow in frost pockets, soils with high water tables, and soils with low fertility. One or more of these conditions are common on most sites in the La Pine area. Consequently, lodgepole pine dominates here in pure or nearly pure stands.

Mature lodgepole pine stands comprise 32 percent (12,843 acres) of the La Pine area. Mature stand structure varies considerably depending on the specific site. The mature stands in the planning area are typical of lodgepole pine in its latter stages of successional development. Generally, there is a remnant overstory of scattered larger trees up to 18 inches DBH and pockets of very dense understory reproduction (up to 5,000 trees per acre). Mature stand condition is generally poor, with high density of low vigor trees and a high susceptibility to insects, disease, and fire. Natural events and human activities have substantially altered stand structure and composition.

During the late 1970s and 1980s a severe mountain pine beetle epidemic occurred over vast acreage of the lodgepole pine forests in central and southern Oregon. The La Pine area is at the northern end of this affected area. Stand structure was drastically altered due to the beetle epidemic. In most of the mature stands, beetle-caused mortality of the overstory (trees 8 inches DBH and larger) ranged from 30-80 percent. High mortality has thinned the overstory, creating many openings and allowing the development of dense patches of seedlings and saplings. Most of the dead trees have fallen to the forest floor and are in varying stages of decay. A small percentage (5-10 percent) of the dead trees from this beetle epidemic are still standing but are expected to all be down within another 5-10 years.

Approximately 68 percent (27,291 acres) of the BLM-administered lands in the La Pine area have been harvested in the last 20 years, primarily with seed tree, shelter wood, or commercial thinning methods (see Map S-34: Historic Timber Sales). Machine piling and

burning were often associated treatments. Commercial and public firewood harvest has removed most of the dead and down trees within 100 feet of roads. The primary objective for the treatments was to alleviate the extreme fire hazard created with the beetle epidemic. Other objectives were to salvage dead and dying trees and regenerate new stands. These harvested areas are now in varying stages of natural regeneration, ranging from a low density of remnant trees or seedlings to densely reforested with saplings 10-12 feet tall. Prior to the beetle treatments of the last 20 years, earlier harvests occurred over nearly the entire La Pine area from the 1950s to the 1970s. These logging entries were generally low-intensity salvage or single-tree selection harvest of larger diameter ponderosa and lodgepole pine.

Insects and disease continue to impact the mature lodgepole stands. Endemic levels of mountain pine beetle are still present in these stands, killing an occasional tree or small group of trees. Timber harvest and pre-commercial thinning treatments have substantially reduced the risk of another major beetle epidemic in the short-term. However, as the remaining smaller trees and new seedlings grow and stand density increases over the next 20 to 50 years, conditions could once again support another major beetle epidemic. Severe infestations of dwarf mistletoe and western gall rust are also common. These diseases generally do not kill trees directly but can have a significant effect on tree vigor and growth. These diseases typically weaken the trees and make them more susceptible to attack by insects or other fungal diseases. Wind and snow breakage of disease-weakened tree boles and branches is common throughout the mature lodgepole stands.

Prior to European settlement, fire occurred in natural lodgepole pine stands every 20 to 100 years. The La Pine basin tends to experience a longer, drier fire season than higher elevation lodgepole stands, and a shorter fire return interval. These periodic natural fires varied in intensity, sometimes thinning small trees and undergrowth, sometimes destroying entire stands. Thinning by light ground fires allowed surviving trees to grow larger. More extensive fire mortality resulted in regeneration of entire stands. Natural fire also maintained a higher percentage of the more fire resistant ponderosa pine on some sites. The effect across the landscape was the development of a variety of vegetative types of different composition, structure, ages, sizes, and shapes. Understory plants were burned off allowing for the rejuvenation of bitterbrush, bunchgrasses, and forbs. Fires would also burn through meadows, killing encroaching tree seedlings and maintaining the extent and integrity of meadow plant communities within the lodgepole pine forest.

In the last century, public agency fire prevention and suppression policies decreased fire's influence on the ecosystem. In the absence of periodic fires, lodgepole pine, ponderosa pine, and meadow communities have changed from the composition expected under a natural fire regime. These plant communities have evolved with fire and depend on periodic natural fires for maintenance and regeneration. Consequently, lodgepole pine stands have developed into an over-mature and overly dense condition. Insects and diseases have increased and tree health and vigor have declined. Forb and grass species have declined in diversity and density. Bitterbrush density has increased and plants have become old and decadent. Meadows have declined in size and species diversity. This trend in plant community and structural changes is likely to continue in the absence of natural fire.

The residual dead and down trees, dense "doghair" lodgepole regeneration, and dense and decadent bitterbrush combine to present a high fuel loading and ladder fuels that pose a serious threat of wildland fire in portions of the La Pine area. The situation is exacerbated by the rapid population growth and development in the La Pine area, which has pushed residential areas deeper into the forest. Treatments within the last five years have focused on creating fire protection zones of up to one-quarter mile adjacent to several residential subdivisions. Although extensive salvage, thinning, and fuels

treatments in the last 20 years have reduced ladder fuels on 68 percent of the La Pine area, there are still several areas of concern near homes and highways. Map S-36, Fire History, shows the remaining high risk zones in the La Pine area.

Ponderosa Pine

Ponderosa pine occurs in small stands and as scattered individual trees in both the northern and La Pine portions of the planning area. Because the La Pine and northern planning area sites are so different ecologically, the discussion of ponderosa pine for the two areas will be separated.

Approximately 8 percent (3,211 acres) of the BLM-administered lands in the La Pine portion of the planning area is covered with ponderosa pine or mixed ponderosa/lodgepole stands in which the ponderosa comprises at least 25 percent of the overstory. Ponderosa pine is particularly evident where there is any hill or slight rise in topography to provide cold air drainage. The largest stands of ponderosa or ponderosa/lodgepole pine mix occur in the vicinity of La Pine State Park, adjacent to Paulina Prairie, northeast of Maston Butte, and west of Wagon Trail Ranch Subdivision. Ponderosa pine also occurs as individual trees widely scattered throughout much of the lodgepole pine type. Understory species are similar to those as described under the Lodgepole Pine subsection.

Ponderosa pine stands in the La Pine area generally have a multi-layered structure with a variety of size and age classes from seedlings to large, mature trees. Dense lodgepole and ponderosa pine reproduction is common in the understory. Historically, there were greater numbers of large diameter ponderosa pine in the La Pine area. Past selective logging, intense stand competition, and mortality by western pine beetle reduced the numbers of these large trees.

Occurrence of insects and disease is far less common in ponderosa pine compared to lodgepole pine. The western pine beetle kills individual, large ponderosa; especially those weakened by stresses such as competition, drought, lightning strikes, or disease. Light infections of gall rust and mistletoe occur in the ponderosa pine. A Pandora moth outbreak in the 1990s defoliated and weakened, but did not kill, most of the ponderosa pine on the north end of the La Pine area.

Commercial timber operations in the last 20 years harvested very few ponderosa pine trees. Salvage and thinning treatments within ponderosa pine stands focused on removing dead and diseased lodgepole pine and leaving the healthier ponderosa pine.

The northern planning area has ponderosa pine on approximately 3 percent (1,800 acres) of that area, often mixed with juniper. The Tumalo area, Squaw Creek, Fremont Canyon, and the forest fringe just east of the Bend-Fort Rock Ranger District, Deschutes National Forest contain most of the ponderosa pine in this area. These dry-site pine stands represent the easternmost extension of the east slope Cascade ponderosa pine forest. Ponderosa pine also occurs as individual trees or in small groups on Powell Buttes, West Butte, Bear Creek Buttes, Crooked River Canyon, and various other north slope and canyon bottom micro-sites where sufficient soil moisture exists. In some of these dry marginal sites, ponderosa pine is expanding into rangeland areas. Grizzly Mountain also has some Douglas-fir mixed with pine on the north and northeast slopes.

These small ponderosa pine stands typically contain a few scattered large diameter trees (20-30 inches DBH) with a mix of seedlings, saplings, and pole-sized trees in the understory. Small pockets of dense ponderosa pine reproduction occur in the stands on the west side of the planning area. There are endemic levels of insects and root disease causing light mortality in individual trees or small groups.

Understory vegetation is similar to that found in the juniper woodlands just to the east. Antelope bitterbrush dominates the shrub layer and is often co-dominant with big sagebrush or gray rabbitbrush, depending on the site. Squaw or golden currant is often present. Idaho fescue or squirreltail dominate the grass layer. Bluebunch wheatgrass is often present but is not as dominant as in the western juniper. Junegrass can be dominant in some of these pine sites.

Ponderosa stands in the northern area had very little harvest activity in the last 20 years. Most of these pine sites were entered at least once within the last 30-50 years, primarily for selective and salvage harvests of larger diameter trees. Selective harvest and stress-induced mortality of mature ponderosa pine has left few areas with late successional or old-growth forest characteristics. These areas serve an important ecological role and provide habitat for a variety of old growth-dependent wildlife species. The occurrence, distribution, and connectivity of this type of forest community is below historic ranges.

Natural fire played a very important role in maintaining the ecological integrity of ponderosa pine stands in the planning area. Fire intervals on these sites were 4-24 years (USDA Forest Service, 1993). Because fires occurred frequently, they tended to be low-intensity ground fires. These periodic ground fires usually burned in a mosaic pattern and consumed duff, needles, broken branches, shrubs, and small trees. Grasses and forbs were maintained in a denser, more vigorous, more diverse condition. Thin-barked juniper and lodgepole pine were periodically thinned by fire and kept in a subordinate position. The result was a nearly pure ponderosa pine stand with an open, one or two layer canopy, low density, and large diameter tree structure.

Fire suppression, beginning in the early 1900s, substantially altered ponderosa pine stand structure. An absence of fire allowed seedlings and saplings of ponderosa pine, lodgepole pine or juniper to establish underneath the larger trees. Current stand structure is now multiple canopy with many more trees per acre at a much smaller average diameter. Lodgepole pine or juniper are gaining dominance. Larger ponderosa pine are showing stress and mortality from understory competition and from drought conditions. Bitterbrush has become dense and stagnant with a high ratio of dead to live branches. Grass and forb density and diversity have decreased.

Riparian and Wetland Communities

Because of their proximity to water, the plant species present in riparian areas often differ considerably from species found in the adjacent uplands. The riparian areas within the planning area represent only a small percentage of the total planning area but are important for the overall health of a system. A functioning riparian zone provides fish and wildlife habitat, protects water quality, stabilizes stream banks, aids groundwater recharge, assists in flood control, and provides visual esthetics and recreational opportunities. Poor upland vegetation or watershed conditions can disrupt riparian functioning. Noxious weeds and western juniper often occupy streamside and other riparian areas in the planning area. These plants have displaced native species in some areas, affecting riparian functioning.

Wet meadows are unique riparian habitat. They occur on areas of saturated soils where the water table varies little by season. Usually there are few, if any, areas of free standing open water. The vegetation of wet meadows consists of sedges, grasses, and forbs. Shrubs are limited in wet meadows that are in PFC (see Water Quantity and Quality) and generally occur along the margins.

Ponds and stock reservoirs may be perennial or seasonal in nature, such as ponds fed by spring snowmelt (see Water Quantity and Quality). Ponds or reservoirs that contain water year round generally support riparian type vegetation such as sedges, rushes,

cattails, and occasionally willow. Vegetation surrounding seasonal ponds or reservoirs usually consists of upland type shrubs and/or grasses, or may not be present at all.

Within the Crooked River Canyon located downstream from Bowman Dam (Chimney Rock segment of the Lower Crooked River WSR), the riparian community type is characterized by willow, sedges, rushes, and grasses. Other shrubs, including red-osier dogwood and mock-orange, can also be found (BLM and BOR, 1992). Downstream from the Lower Crooked WSR segment, the valley bottom widens and the riparian community type is characterized more by herbaceous vegetation such as grass, sedges and rushes, and less so by shrubs and trees.

Approaching the Lower Crooked River WSR segment near Smith Rock State Park, the river becomes increasingly confined, generally flowing through a deep, narrow canyon. The same holds true for the Middle Deschutes River downstream from the city of Bend. The riparian zone in both canyons is narrow and dominated by woody species including alder, red-osier dogwood, willow, chokecherry, rose, clematis, sedge, rush, and various grasses. There are very few broad areas containing extensive willow or sedge/rush communities. Increasingly, talus and boulders are piled onto the banks and even into the river. Often woody and emergent riparian vegetation grows between boulders. Occasionally the canyon walls recede somewhat and the flood plain widens allowing a wider riparian zone and adjacent grassy terraces. Within the canyons a number of springs emerge from the canyon walls where there is an increase in riparian vegetation including areas of emergent and sedge/rush communities. These riparian zones associated with springs are relatively small in area, usually less than a few acres in size.

The Upper Deschutes River WSR segment is characterized by stands of lodgepole pine and ponderosa pine as an overstory; a shrub understory of spiraea, snowberry, alder, or willow, and an herbaceous layer of forbs and sedges. There are several large willow/sedge meadows scattered within the reaches (USDI Forest Service, 1996b).

The Little Deschutes River contains a complex mosaic of riparian habitats on broad flood plains, including broad meadow and prairie areas composed primarily of sedge, rush, and/or grass communities with scattered willows and other woody riparian species. Most of these meadows are drained and irrigated with water from the Little Deschutes River or one of its tributaries. Where these meadows are drained and irrigated, they tend to be dominated more by grass species with sedge/rush communities along the ditches and occasional willow communities. Adjacent to the Little Deschutes River and its oxbows, there are dense willow communities interspersed with wet meadows encompassing a wide variety of emergent and flood tolerant species of vegetation.

Wet meadow, forested wetlands, and shrub wetlands habitat is very limited, much of it is not yet mapped electronically (see Water Quantity and Quality). Most of the wetland type vegetation is associated with the high groundwater table in the La Pine area. Sedges, rushes and willows are dominant species within wet meadows adjacent to the Little Deschutes River, and lodgepole pine inhabits forested wetlands.

Large floods typically reset riparian vegetation to early seral species, or set back the condition and amount of late seral species. These flood events generally occur during late winter or early spring. Large floods periodically occur in Bear, Sanford, and other creeks in the Crooked River watershed. The magnitude and frequency of flood events on the Crooked River below Bowman Dam has been reduced since the closure of the dam in 1960. Prior to the closure of Bowman Dam in 1960, average peak discharges typically ranged from 3,000-7,000 CFS. Following closure, peaks never exceed approximately 3,300 CFS. This limits the ability of the stream to rejuvenate during the landform developing process of large floods. Peak flows that used to occur on average once every 1.5 years (i.e., 2,200 CFS, approximately bankfull flow) now occur half as often, or about once every three years (See Figure 3-3, Flow Duration Curves Crooked River below Bowman

Dam, in the Water Quality and Quantity section of this chapter). This reduced frequency of what was once bankfull flow likely has a significant effect on channel morphology and the resulting riparian vegetation type and composition. Likewise, stream-flows on the Deschutes River have been altered since 1922 by Crane Prairie Reservoir and since 1942 by Wickiup Reservoir.

The various hardwood trees and shrubs associated with riparian areas in several perennial streams and canyons in the planning area provide important habitat for wildlife and contribute to stream ecology and water quality. Examples of these species include alder, willow, chokecherry, serviceberry, red osier dogwood, bog birch, ocean spray, mock-range, currant, snowberry, wild rose, spirea, and aspen. Aspen occurs in only two known locations in the planning area, south of Grizzly Mountain and east of La Pine.

The bio-diversity provided by hardwoods, particularly valuable on xeric landscapes, is being reduced in the planning area by various activities such as fire exclusion, improper grazing and intensive riverside recreation.

Fire is probably relatively infrequent in the meadow and streamside habitats occupied by riparian species within the planning area. In fact, riparian areas frequently act as fire breaks. The high soil and fuel moisture content characteristic of streamside habitat reduces the chance of fire ignition and spread. However, under dry conditions, riparian habitats can burn severely (USDA Forest Service, 1982). Many riparian species are fire tolerant and may even benefit from low to moderate intensity fires. Most willows in all stages of vigor re-sprout from the root crown or stem base following fire (Haeussler & Coates, 1986; USDA Forest Service, 1981; Rowe & Scotter, 1973; Zasada, 1986) and their numerous wind dispersed seeds are important in re-vegetating areas following fire (Miller & Miller, 1976). Sedges and rushes also can survive fire by sprouting from their extensive rhizomes (Boggs, *et al.*, 1990; USDA Forest Service, 1991b). Golden and gooseberry currant regeneration is probably favored by low to moderate severity fire because germination of soil-stored seed is generally enhanced by scarification in *Ribes* spp. (USDA Forest Service, 1994; USDA Forest Service, 1991a; Moss & Wellner, 1953; USDA Forest Service, 1993; USDA Forest Service, 1989a). Plants in the rose family, as well as serviceberry, chokecherry, bitter cherry, and red osier dogwood are all moderately fire tolerant and are usually favored by low-severity fire. They can persist after low to moderate severity fire because of their ability to sprout from undamaged and/or buried root crowns and rhizomes (Boggs, *et al.*, 1990; Haeussler, *et al.*, 1990). Black cottonwood and white alder are not considered fire tolerant and are highly susceptible to fire damage.

Special Status Plants

The policy of BLM is to 1) conserve listed species and the ecosystems on which they depend, and 2) ensure that actions authorized or carried out by BLM are consistent with the needs of special status species and do not contribute to the need to list any of these species. The BLM's policy is intended to assure the survival of those plants that are rare or uncommon, either because they are restricted to specific, uncommon habitat or because they may be in jeopardy due to human-caused or other actions.

Apart from law or policy, three main reasons stand out for conservation of special status species. First, each occupies a niche and has a role in its ecosystem, although we do not always know what that role is. All parts of the system are inter-related and important, even if we don't yet understand the connections. Biological diversity and ecosystem integrity are important for the economic and social, as well as the ecological environment. Second, plants offer untold potential for human benefit, especially as related to pharmaceuticals as nearly all pharmaceuticals were originally plant-based. Loss of a species may mean the loss of a future "wonder drug" or other genetic material valuable for enhancing human lives. Finally, these species add aesthetic diversity to our world.

For BLM, “Special Status” plants include those species that are proposed for listing, officially listed as threatened or endangered, or are candidates for listing under the provisions of the Endangered Species Act (ESA); those listed by a State in a category such as threatened or endangered, implying potential endangerment or extinction; and those designated by each BLM State Director as sensitive (BLM, 2001).

In Oregon, the BLM designation “sensitive” further includes two sub-categories: “Bureau Sensitive” and “Assessment Species.” Bureau Sensitive species include those plant species formerly designated by the U.S. Fish and Wildlife Service (USFWS) as Category 1 and 2 candidates for listing as endangered or threatened under the Endangered Species Act and now termed “Species of Concern.” This category also includes species considered by the Oregon Natural Heritage Program (ONHP) to be “endangered or threatened throughout their range.” Assessment species include those species considered by ONHP to be “endangered or threatened in Oregon but more common elsewhere”.

No species either listed, proposed for listing or candidates for listing under the ESA are known from or suspected on BLM-administered lands in the planning area. However, for those State-listed species and sensitive species, existing factors such as declining populations, reduction in habitat, increased disturbances, small and widely dispersed populations and unique habitat requirements contribute to a need for increased management attention to these species to ensure they do not need to be listed under the ESA.

Special status plants receive priority attention for inventory, research, monitoring and management. All proposed ground disturbing activities are subject to botanical inventory prior to implementation and other inventory is accomplished as time and funding allows. All special status plant populations are monitored on a regular schedule with the intervals between visits based on the needs of each. Challenge cost share agreements between the Oregon Department of Agriculture (ODA) and The Nature Conservancy (TNC) have, and continue to provide in-depth monitoring for several species in the District.

All Bureau-authorized actions are reviewed to ensure they do not contribute to the need to list any special status species. This may include modification or abandonment of the proposed action with consideration for protection of the species’ habitat as well as the species itself.

Four special status plants are known to occur on BLM-administered lands within the planning area, as shown in Table 3-10, below.

Table 3-10 Special Status Plants within the Upper Deschutes Planning Area

Latin Name	Common Name	Status ¹	Ownership
<i>Astragalus peckii</i>	Peck’s Milkvetch	BS, SOC, T, 1	BLM, USFS, pvt.
<i>Artemisia estesii ssp. peckii</i>	Estes’ Wormwood	BS, SOC, 1	BLM, USFS, pvt.
<i>Botrychium pumicola</i>	pumice grapefern	BS, SOC, T, 1	BLM, USFS, pvt.
<i>Castilleja chlorotica</i>	green-tinged paintbrush	BS, SOC, 1	BLM, USFS, pvt.
¹ BS – Bureau Sensitive SOC – Species of Concern T – Listed Threatened by the State of Oregon 1 – OHNP List 1, Endangered or Threatened throughout its range			

Peck's milkvetch is predominately found in the area southwest of Cline Buttes, between Tumalo and Plainview. Preferred habitat is open sandy soil dominated by western juniper and sagebrush, usually with a flat aspect. Sandy basins are especially preferred. While the Cline Buttes area is the area with this plant's greatest concentration, several populations have been found on Forest Service and private land south of the planning area in pumice soils dominated by lodgepole pine, with one population located on public land at the extreme south end of the planning area.

The block of BLM-administered land south of Plainview was designated as Peck's Milkvetch Area of Critical Environmental Concern (ACEC) in 1986 (see DEIS Map 7: Special Management Areas). Since 1986, the ACEC has been intensively inventoried for the species and ongoing inventory has extended the plant's known range northeast toward Cline Buttes.

The greatest concern for Peck's milkvetch is the loss of suitable habitat as habitat on private land is developed. Habitat loss is expected to increase in proportion to the increase in population living in and adjacent to the planning area. On public land, any activities that cause long-term trampling of the plants and/or soil disturbance are cause for concern as these actions will reduce the plant's vigor and ability to reproduce. This includes, but is not limited to, improper livestock grazing and recreation, but especially unauthorized vehicle use away from established routes and illegal activities such as dumping and firewood theft. Peck's milkvetch has been observed to establish on disturbed sites but only if the disturbance is short-lived and not ongoing. Both recreational impacts and impacts resulting from unauthorized activities are expected to increase along with the human population of Deschutes County. Fire, as a natural component of the ecosystem, is not considered to be detrimental to the plant. Some vigorous Peck's milkvetch populations have been found in areas which have clearly burned within recent history.

On BLM-administered land within the planning area, Peck's milkvetch appears to be stable. A long-term monitoring study, in cooperation with The Nature Conservancy, was established in 1992, and data collected again in 1993, 1994, and 2000. Based on statistical analysis of the data, it appears Peck's milkvetch increased after 1992 (a dry year) but that some populations may be returning to 1992 levels. Further monitoring will be necessary to determine the trends of these populations (Rudd, 2001).

Estes' wormwood is a perennial, herbaceous relative of big sagebrush. Its primary known habitat is sandy and gravelly soils along the Deschutes River, from near La Pine in the south to Lake Billy Chinook in the north. Additionally, an old collection of Estes' wormwood has been documented as coming from Bear Creek. While this population has not been relocated, recent inventory has found the species in the Prineville Reservoir area and at two locations along the Lower Crooked River, one just below Bowman Dam and from the area just south of Lake Billy Chinook. It is likely that other populations occur elsewhere along the Crooked River.

Estes' wormwood is affected by livestock and wildlife grazing, streamside recreation, and any activity that degrades the riparian areas along the Crooked and Deschutes Rivers. Direct impacts on the plants would result in a loss of vigor and reproductive capability, while a change in species composition of the riparian community could result in a drying of the site and a loss of appropriate habitat. Equally important, would be upstream pollution or a widely-fluctuating flow regime. As a clonal species, it is likely fire would have no effect. As the population of Central Oregon increases, it is probable that visitor use in the riparian areas along both the Crooked and Deschutes Rivers will increase as well. This would likely result in continued disturbance and alteration of Estes' wormwood habitat. Due to the relative inaccessibility of much of its habitat and the reduced amount of grazing that occurs in the canyons, Estes' wormwood appears to be stable, but there are no quantitative studies to substantiate this.

Pumice grapefern generally has a distribution from near Crater Lake to the Deschutes National Forest northeast of La Pine. Originally thought to be found only on high elevation pumice flats, more recent inventory has documented extensive occurrences in the lodgepole pine forest of the La Pine Basin and to the northeast. It grows exclusively on deep pumice soils associated with the Newberry and Mt. Mazama ash deposits and, on BLM-administered land, is found mostly south and east of La Pine.

Pumice grapefern in the planning area has been impacted through habitat change. An increased lodgepole pine canopy, as a result of fire suppression, coupled with an abundance of dead and down trees from the recent outbreak of the mountain pine beetle, has resulted in an extremely heavy litter component in much of the La Pine Basin. While the shading resulting from the dense canopy and heavy litter concentration is most likely detrimental to the pumice grapefern, another concern relates to the potential of catastrophic fire as a result of these conditions. The pumice grapefern, no doubt, existed within a natural fire regime in the La Pine Basin, but the existing fuel loading and potentially extreme burning conditions would probably be detrimental should fire occur.

As a relatively fragile species (a fleshy plant growing in easily dislodged soils), pumice grapefern is also easily damaged by logging machinery, off-road vehicle use, and livestock grazing (trampling), although grazing isn't a major factor within its range. Although plants have been found in areas subjected to such activities, it does not appear that this is a preferred habitat, as plant densities appear to be substantially less than in undisturbed areas.

The long-term trend of pumice grapefern is unknown. It is likely that populations have declined due to an increase in the lodgepole pine overstory, but now that many of these areas have been harvested and the woody material removed, these populations could be recovering. Issues related to predation of some populations by animals, inconsistent emergence in the spring and the unknown influence of weather make this a difficult species to monitor with any consistency and, therefore, it is difficult to infer trend. The BLM is a partner in funding a project designed to determine the effects of various types of disturbance on pumice grapefern. Results should be available in 2005.

Green-tinged paintbrush in the Prineville District is at the northeastern edge of its range, and within the planning area, is known from the Horse Ridge, Golden Basin, and West Butte and Bear Creek Buttes areas. Requiring a fungal interface with shrubs, it is found most often associated with big sagebrush but also with pronghorn bitterbrush in ponderosa pine or lodgepole pine communities. Green-tinged paintbrush is more common, although still a Species of Concern, on the Deschutes and Fremont National Forests.

Identified disturbances to green-tinged paintbrush include livestock grazing, off-road vehicle use and fire. Observations indicate that green-tinged paintbrush is preferred by livestock, and in areas where livestock use is heavy during the growing season, heavy utilization of green-tinged paintbrush has been noted. OHV use is a concern since several known populations occur within or adjacent to areas used by OHV enthusiasts.

While fire may enhance most native plant communities, survival of mature big sagebrush and bitterbrush, neither of which are fire resistant, is critical for survival of green-tinged paintbrush. Green-tinged paintbrush has been effectively extirpated from burned areas, although plants survive adjacent to these areas and can likely repopulate in time. No data exists, but it appears that green-tinged paintbrush is stable within the planning area.

Noxious Weeds

There are many exotic (non-native) plant species that occur within the planning area. Most of these aggressive species have been introduced, usually from Europe, Asia, or Russia. These species were imported, either intentionally for their perceived value to humans or inadvertently as contaminants in feed or other seed or plant products.

The term “weeds” is loosely applied to most of these introduced species. A weed is defined as any plant that interferes with the management objectives for a given area of land at a given point in time (Dewey and Torell 1991). Of the exotic species in the planning area, 12 have been classified by the counties and State as noxious weeds. “Noxious” is a legal classification rather than an ecological term. Government agencies may designate a species a “noxious weed” if it directly or indirectly imposes economic or ecological effects to agriculture, navigation, fish and wildlife, or public health. Federal, state and county laws and ordinances require that certain actions be taken to manage listed noxious weed species.

Noxious weeds pose a threat to native biological systems and degrade all multiple uses and other values on BLM-administered lands. These plants use water, nutrients, and sunlight that would otherwise be used by native species, thus altering natural communities and ecosystems. The invasiveness of weeds is due to their genetic makeup, which enables them to exploit a resource “niche,” and the lack of natural enemies such as insects, diseases, and pathogens (Story, 1992). Some of the consequences of noxious weeds on BLM-administered lands include effects on: productivity of native rangelands; diversity of native plant and animal species; range and population of special status plants; habitat structural diversity; soil biological crusts; scenic values; tourism; recreation; and in some cases, human health and safety. Noxious weeds degrade these uses and values by displacing native plant species, decreasing soil stability, and disrupting natural processes such as soil/water interactions, fire frequency and intensity, nutrient cycling, and energy flow.

Noxious weed species are well-established and spreading rapidly in the planning area. The spread of noxious weeds has been considered analogous to a biological wildland fire. The local expansion of noxious weeds is part of a trend involving all of the other western states. Almost all the listed species in Central Oregon have expanded in both area and numbers of populations in the last 10 years. Weed seed is carried and spread by livestock, wildlife, wind, water, and people and their vehicles. The spread of weeds on BLM-administered lands is particularly apparent where surface soils or native vegetation are disturbed. Some of the disturbance factors on BLM-administered lands are off-road vehicle travel, livestock grazing, logging, military training exercises, and construction of roads and utility lines. A majority of infestations occur adjacent to roads, power lines, ditches, and canals; indicating that the primary carriers of weed seed are vehicles and water. Ground-based activities, particularly those involving motor vehicles or equipment, disturb surface soils which has the effect of preparing a receptive seed bed for these pioneering species.

The following is a brief description of the most important noxious weed species found in the planning area:

Spotted and Diffuse Knapweed: Spotted and diffuse knapweed are widespread, with the Bend area having the largest infestation of spotted knapweed in the state. Spotted knapweed is expanding in all directions. Diffuse knapweed is more plentiful in the northern and eastern portions of the planning area. Both produce an abundance of seed that is easily spread.

Russian Knapweed: Russian knapweed is found in patches and is more common in Crook County along riparian areas and agricultural fields. This is a deep-rooted perennial that

spreads relatively slowly. It is more resistant to control methods and has no established biological control agents (see glossary) in Oregon.

Hoary Cress: Hoary cress invades irrigated fields and riparian areas; it is most common in Crook County. It is a deep-rooted perennial. There are no biological control agents available for this species.

Leafy Spurge: Leafy spurge grows primarily in Crook County in the riparian areas of Mill Creek and the Crooked River. It also is present in the adjacent riparian areas of canals, ditches and irrigated fields. Its close proximity to water makes for difficult control.

Dalmatian Toadflax: Dalmatian toadflax is common in the Bend and Redmond areas and is expanding in all directions. Due to its very pretty yellow snapdragon-like flower, this noxious weed is often spread inadvertently by homeowners who cultivate it in flowerbeds.

Poison Hemlock: Poison hemlock is very poisonous to both humans and livestock if eaten. It is found in wet areas along rivers and irrigation ditches in the area. It poses a public health risk where it occurs in or near recreation areas.

Perennial Pepperweed: Perennial pepperweed is deep rooted and inhabits riparian areas and wet areas along canals, ditches and irrigated fields. The largest infestation in the planning area is at the upper end of Prineville Reservoir.

Scotch Thistle: Scotch thistle can take over large areas and render land useless for most activities. Scotch thistle, mostly a biannual, grows to 6 to 8 feet tall.

Medusahead: Medusahead is a very invasive annual grass that will replace most other native range plants. This species can dominate silty or clay soil types. It develops a silica mat of vegetation and can present an extreme fire hazard.

Yellow-Star Thistle: Yellow-star thistle is an annual that quickly dominates a site by massive growth of plants from seeds after any small amount of rain. Bees are attracted to it as it blooms all summer long. Very stiff spines around flower discourage people use in area of dominance.

Puncture Vine: Puncture Vine is a common annual in Crook and Jefferson Counties. It has spiny seed pods that cause grief for bike riders, dogs and bare-footed pedestrians.

In addition to the agency-listed noxious weed species, there are other common non-native species that are causing varying degrees of impacts to public land resources. These species include cheatgrass, tumbleweed, ragweed, and various thistles and mustards. Cheatgrass, although not listed as a noxious weed, is very prevalent in the planning area and is damaging to native landscapes. This annual was introduced from Asia. It can out-compete native grasses by its ability to germinate in the fall and early spring, by its aggressive establishment after fire or other ground disturbance, and by its production of abundant and persistent seed.

Wildlife and Fish

This section describes the current habitat conditions and unique features of the landscape that provide for wildlife species throughout their life cycles. As previously described in the vegetation section, the planning area is characterized by several major distinct vegetative community types. These major vegetative community types along with non-vegetative habitats such as caves, cliffs, and water provide a set of conditions, structure, scale, and disturbances that affect the diversity and abundance of the wildlife associated with each habitat type.

Table 3-11. Species of Focus

Common Name	Scientific Name	Assessment type: Single-species or Source Habitat (Multi-species ¹)
Federally Listed Species (Threatened)		
Northern Bald Eagle	<i>Haliaeetus leucocephalus</i>	Single Species
Federal Candidate Species		
Columbia Spotted Frog**	<i>Rana luteiventris</i>	Source Habitat: Riparian
Oregon Spotted Frog	<i>Rana pretiosa</i>	Source Habitat: Riparian
Bureau Sensitive Species		
AMPHIBIANS AND REPTILES – None		
BIRDS		
American Peregrine Falcon**	<i>Falco peregrinus anatum</i>	Source Habitat: Riparian
Black-backed Woodpecker	<i>Picoides arcticus</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine Forest
Burrowing Owl	<i>Athene cunicularia</i>	Source Habitat: Shrub – Steppe
Ferruginous Hawk	<i>Buteo regalis</i>	Source Habitat: Shrub – Steppe
Flammulated Owl	<i>Otus Flammeolus</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine
Lewis’s Woodpecker**	<i>Melanerpes lewis</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine
Northern Goshawk	<i>Accipiter gentilis</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine
Northern Pygmy owl	<i>Glaucidium gnoma</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine
Northern Three-toed Woodpecker	<i>Picoides tridactylus</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine
Pygmy Nuthatch (BM)	<i>Sitta pygmaea</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine
Upland Sandpiper	<i>Bartramia longicauda</i>	Source Habitat: Riparian, grassland
Western Sage Grouse	<i>Centrocercus urophasianus phaios</i>	Single Species
White-headed Woodpecker**	<i>Picoides albolarvatus</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine
MAMMALS		
Fisher	<i>Martes pennanti</i>	Source Habitat: Riparian
Townsend’s Big-Eared Bat	<i>Corynorhinus townsendii</i>	Single Species
Bureau Assessment Species		
AMPHIBIANS AND REPTILES – None		
BIRDS		
Black-throated Sparrow	<i>Amphispiza bilineata</i>	Source Habitat: Shrub-Steppe
Northern Water Thrush**	<i>Seiurus noveboracensis</i>	Source Habitat: Riparian
Tricolored Blackbird**	<i>Agelaius tricolor</i>	Source Habitat: Riparian
MAMMALS		
Pygmy Rabbit	<i>Caprolagus idahoensis</i>	Source Habitat: Shrub-Steppe
Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>	All - general
Spotted Bat	<i>Euderma maculatum</i>	Source Habitat: Shrub-Steppe, forest/ woodland, Riparian
Bureau Tracking Species		
AMPHIBIANS AND REPTILES		
Cascade Frog	<i>Rana cascadae</i>	Source Habitat: Shrub-Steppe
Northern Sagebrush Lizard	<i>Sceloporus graciosus graciosus</i>	Source Habitat: Shrub-Steppe
Western Toad	<i>Bufo boreas</i>	Source Habitats: All General

Common Name	Scientific Name	Assessment type: Single-species or Source Habitat (Multi-species ¹)
BIRDS		
Bank Swallow	<i>Riparia riparia</i>	Source Habitat: Riparian, Shrub-Steppe
Great Gray Owl	<i>Strix nebulosa</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine forest
Greater Sandhill Crane**	<i>Grus Canadensis tabida</i>	Source Habitat: Riparian
Loggerhead Shrike**	<i>Lanius ludocicianus</i>	Source Habitat: Shrub-Steppe, Juniper Woodland
Long-billed Curlew**	<i>Numenius americanus</i>	Source Habitat: Shrub-Steppe, Riparian
Mountain Quail	<i>Oreortyx pictus</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine forest
Olive-sided Flycatcher	<i>Contopus borealis</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine forest
Pileated Woodpecker	<i>Cryocopus pileatus</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine forest
Pine Grosbeak	<i>Pinicola enucleator</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine forest
Pygmy Nuthatch (EC, HP)**	<i>Sitta pygmaea</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine forest
Sage Sparrow	<i>Amphispiza billi</i>	Source Habitat: Shrub-Steppe
Williamson's Sapsucker**	<i>Sphyrapicus throideus</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine forest
Willow Flycatcher	<i>Empidonax hax trailiitii brewsteri</i>	Source Habitat: Riparian/woodland
MAMMALS		
American Marten	<i>Martes Americana</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine forest
Bighorn Sheep	<i>Ovis canadensis</i>	
Long-eared myotis**	<i>Myotis evotis</i>	Source Habitat: Forest, Shrub-Steppe, Woodland, Riparian
Long-legged myotis**	<i>Myotis volans</i>	Source Habitat: Forest, Shrub-Steppe, Woodland, Riparian
Pallid Bat**	<i>Antozous pallidus</i>	Source Habitat:
Preble's Shrew**	<i>Sorex Preblei</i>	Source Habitat: Shrub-Steppe, Riparian
Silver-haired bat**	<i>Lasionycteris noctivagans</i>	Source Habitat: Ponderosa Pine/Lodgepole Pine Forest
Spotted bat	<i>Euderma maculatum</i>	Source Habitat: Shrub-Steppe, Woodland
Western Gray Squirrel	<i>Sciurus griseus</i>	Source Habitat: Ponderosa Pine Forest
Western Small-footed Myotis**	<i>Myotis ciliolabrum</i>	Source Habitat: Shrub-Steppe, Ponderosa Pine, Juniper
White-tailed Jackrabbit**	<i>Lepus townsendii</i>	Source Habitat: Shrub-Steppe, Ponderosa Pine, Juniper
Yuma Myotis**	<i>Myotis yumanensis</i>	Source Habitat: All General
Species of Local Interest		
Mule Deer	<i>Odocoileus hemionus</i>	Single-species
Rocky Mountain Elk	<i>Cervus elaphus nelsoni</i>	Single-species
Pronghorn	<i>Antilocapra Americana</i>	Single-species
Golden Eagle	<i>Aquila chrysaetos</i>	Single-species

Table notes:

** Species to consider conducting surveys on to determine population and habitat presence/absence.

¹ For multi-species assessment types the animal's associated source habitat(s) is (are) named.

This document focuses on priority wildlife species, which includes both non-special status species and special status species. These priority wildlife species are called “Species of Focus” and are listed in Table 3-11. Species of Focus are vertebrate species for which there is ongoing concern about population or habitat status. For this planning effort species were included if they met either of two criteria:

- Species that are included in the Special Status Species Policy (6840) which includes: federally listed threatened, endangered, proposed or candidate species; Bureau Sensitive, Assessment, or Tracking Species; and State listed species.
- Species of local interest, such as deer, elk, pronghorn and golden eagles.

Birds

Raptors

Raptors are a group of predatory birds that includes eagles, falcons, hawks and owls. They are a common sight in much of the planning area and use a wide range of habitats. Many raptors are viewed as species of high public interest. Raptors and their habitats are protected under the Eagle Protection Act (1963) and the Migratory Bird Treaty Act (1918). Raptors that occur or could occur in the planning area include one federally listed species, five BLM sensitive species, and two BLM tracking species.

Much of their life cycle is dedicated to breeding, nesting, and raising young. Most raptors require elevated nesting sites and have historically used a variety of nesting platforms on which they construct stick nests. In the planning area nesting occurs on cliff ledges, lava rock out-crops, single large ponderosa trees, lodgepole pine thickets, juniper trees, utility poles, grasslands, wetlands, and riparian associated vegetation. Foraging habits differ by species, but most raptors prey on a variety of small mammals, reptiles, birds, and insects.

Except for the bald eagle, no systematic inventories have been completed for raptors or their habitats, but many species have been recognized as year-round residents of the planning area. Species present in the planning area include bald and golden eagles, osprey, ferruginous hawk, northern goshawk, Swainson’s hawk, red-tailed hawk, Cooper’s hawk, sharp-shinned hawk, American kestrel, northern harrier, and prairie falcon. During winter many of these species migrate south to various wintering grounds. Central Oregon serves as a winter area for the rough-legged hawks, which are seasonally abundant throughout the northern portion of the planning area. Owls are year-round residents; however a few species do migrate in winter. Common owls in the planning area include the great horned, great gray, long-eared, short-eared, barn, western screech, and northern saw-whet.

In Oregon the northern bald eagle was federally listed in 1978 as a threatened species under the Endangered Species Act (ESA) of 1973 (as amended CFR, 1988). The eagle was placed in this status as a result of destruction of habitat, harassment and disturbance, shooting, electrocution, poisoning, a declining food base, and environmental contaminants. Recovery efforts during the past two decades have increased the population above the goals of the Pacific Bald Eagle Recovery Plan (USDI 1986).

Bald Eagle

Habitat Requirements—Bald eagle nesting territories are normally associated with lakes, reservoirs, or rivers. Nests are usually located in large conifers in uneven-aged, multi-storied stands with old-growth components (Anthony *et al.*, 1982). Factors such as tree height, diameter, tree species, and position on the landscape, distance from water, and distance from disturbances also appear to influence nest selection. Additionally, eagles select trees that provide vantage points from which territories can be defended. Bald eagles feed primarily on fish during the spring/ summer but may shift to waterfowl and rodents during fall and winter.

Bald eagles exhibit nest site fidelity and will therefore usually nest in the same territory and use the same nest year after year. Availability of suitable trees for nesting, foraging, and roosting is critical for maintaining bald eagle populations. Bald eagle nests in the Pacific Northwest are located in uneven-aged stands of coniferous trees that may display some old-growth forest characteristics. Eagles usually select the oldest and tallest trees that have good visibility, an open structure, and are near prey. The tree selected for nesting is usually dominant or at least co-dominant within the stand. These sites are generally located within one mile of large bodies of water. Nest trees are often constructed to provide an unobstructed view of an associated water body and are often in prominent locations on the topography (Anthony and Isaacs 1989). Live, mature trees with deformed or minimally decadent tops may be selected, although live canopy material protects the nest in most cases. Nests are usually found in the upper 1/3 of the nest tree. Since eagles will add material to their nests each year, nest size can be considerable, requiring a large nest tree to support it. Mean diameter for trees east of the Cascades in Oregon is between 1.0 and 1.2 meters, Nests are most commonly constructed in Douglas fir, Sitka spruce, and ponderosa pine trees, with average heights of 116 feet (USFWS 1986).

For roosting, eagles prefer the largest live trees with open structures for visibility. Roosting sites need not be as near to water as nesting sites. It is more important that roosting sites are in dense stands that offer protection from weather. Eagles usually arrive at roost sites after dark and depart roost sites before dawn.

Bald eagles eat fish, reptiles, birds, mammals, invertebrates, and carrion, including that of livestock. Bald eagles are driven by food availability, especially during winter months. Wintering areas that provide adequate food and areas free from harassment are possibly the most significant contribution to adult survival. They provide an easy, low energy cost source of nutrition during times of seasonal stress. When combined with nearby roosting habitat that is protected from foul weather and harassment, the advantage to the fitness of the eagles is tremendous. It is especially valuable for immature bald eagles because when prey availability is low, immature eagles are likely to experience the highest mortality rates.

Distribution and Abundance—Surveys of nesting bald eagles have been conducted annually since 1979 by the Oregon Cooperative Wildlife Research unit, the Oregon Eagle Foundation (OEF), Portland General Electric (PGE), BLM, and USFS. These surveys have identified three bald eagle nests on BLM-administered land, one on National Forest land, and three on private lands within and adjacent to the planning area. Additionally, four nests have been located on National Forest and private lands within two miles of the planning boundary.

Two of the three nests on public land occur immediately adjacent to major water sources where recreationists could influence eagle occupancy. The other nest site requires the eagles to travel longer distances for foraging, yet has been successful the past several years (Isaacs survey records, 1991-2001).

One nest is located in what has been identified above as preferred habitat. The other two nests are located in areas where the vegetation can be described as juniper woodlands with occasional ponderosa pine stringers providing nesting and roosting trees. Live and dead ponderosa can also be found along the edge of a nearby water body, providing foraging perches. These stands tend to be much more open, making the nests more visible to the casual observer than nests in “preferred habitat.”

Other Raptors

The golden eagle is a species of high public interest and is protected under the Bald Eagle Protection Act (1963) and the Migratory Bird Treaty Act (1918). Golden eagles are year round residents and construct large stick nests mainly on cliffs and sometimes in large conifers. Golden eagles prefer open shrub/grasslands, and open woodlands where they prey on rabbits and hares, marmots, squirrels, and other small to medium-sized animals.

Systematic inventories have not been conducted for golden eagles or their habitats, however, nests sites have been found in the planning area on canyon rims (rock ledges), old-growth juniper trees, and large single ponderosa pine trees. The BLM Prineville District works with ODFW and volunteers to monitor some of these nests annually. Golden eagles are sensitive to human disturbances during the breeding season and they often nest in areas popular for recreational activities.

The peregrine falcon (Bureau Sensitive) was federally listed as an endangered species throughout its range and as a state endangered species. However, in 1999, the peregrine falcon was de-listed after recovery efforts helped the population achieve the recovery goals set forth in the 1982 Pacific Coast Recovery Plan for the American Peregrine Falcon.

The peregrine falcon is a cliff-nesting species, preferring tall cliffs with ledges, or small caves that are suitable for constructing a nest scrape (USFWS 1982). Nest sites are usually associated with cliffs near water with an abundant population of non-game birds, shorebirds, and waterfowl, the peregrine's primary prey. Raptor surveys conducted throughout Central Oregon have determined that suitable habitats exist, but no nests sites were found. Peregrine falcons can be observed in the planning area during winter migration.

The northern goshawk (Bureau Sensitive) occurs both in the northern planning area and the La Pine block. Goshawks, normally a forest bird, are common in coniferous forests, but will also use aspen groves, desert mountain ranges, and dense juniper woodlands. Goshawk nests are usually located in the fork of a tree limb near the trunk of the tree. Diet consists of both birds, and small mammals. Surveys have located several nests in the La Pine area. No surveys have been conducted in the northern portion of the planning area, but there are two known nests sites that have been active the past several years.

Prairie falcons are common in the planning area and protected under the Migratory Bird Treaty Act. They typically inhabit arid deserts and open grasslands where they use cliffs for nesting habitat. A cliff is any vertical rock face or structure that may exist as rock spires, vertical scarps, volcanic dikes, or large lava blisters. These falcons are opportunistic feeders that can take small mammals up to the size of jackrabbits but mainly forage small mammals and birds, lizards, and grasshoppers.

No systematic inventories have been completed for prairie falcons but several known nest sites are monitored annually. BLM coordinates with ODFW and volunteers to monitor these nests. These nest sites mainly occur on cliff faces in river canyons but there are several known nests in lava blisters and small rim-rock escarpments.

Little is known about flammulated owls (Bureau Sensitive) in the planning area. Flammulated owls use open conifer forests and appear to prefer ponderosa pine. It requires fairly large trees for roosting that are adjacent to patches of grassland or meadow, where it forages. This owl is mainly an insectivore, preferring grasshoppers and moths, but also eating beetles, crickets, spiders, and occasionally small mammals and birds. A limited amount of surveying has been done in portions of La Pine block with no locations found. No known nesting occurs in the planning area.

Burrowing owls (Bureau Sensitive) historically occurred in the planning area but there have been no sightings in the past several decades. They prefer open grassland habitats where they feed mainly on small mammals and insects.

The northern pygmy owl (Bureau Sensitive) is a small owl that will hunt by day and nests in tree cavities. Like most owls, the Pygmy owl does not create nesting cavities so it depends on woodpeckers, nuthatches, and natural decay processes. This owl inhabits moist forest types, riparian woodlands, as well as drier ponderosa pine forests. This species will move to lower elevations during winter, and will also make use of juniper

and aspen stands. Past forestry practices that removed dead standing and live trees with internal decay have impacted nesting habitat for this species. Current federal land management practices include conservation measures for their nesting habitats.

The major impacts to raptors or their habitat are disturbances near the nest during the nesting season. Disturbances are usually a result of human uses such as mining, OHVs, rock or cliff climbing, equestrian rides, target shooting, boating, and hiking. In general, habitat conditions have remained relatively stable in the planning area, but human uses are increasing near known nesting areas. During the past several years, golden eagles and prairie falcons have changed nesting sites in areas of high recreational use, suggesting that increasing disturbances may effect nest locations and productivity.

Several known nests sites are monitored annually, usually related to areas of high recreational use. BLM coordinates with ODFW and volunteers to monitor these nests and seasonal closures have been put in place to protect these important reproductive habitats.

Upland Birds

A variety of upland birds occur within the planning area, using all vegetation types in the area. These birds are hunted for sport and regulated by ODFW. Species that occur in the planning area include native sage grouse, ruffed grouse, valley quail, and mountain quail, and introduced ring-necked pheasant, wild turkey, chukar, and gray partridge. Sage grouse and mountain quail are species of concern and will be the only ones from this group covered in detail.

Upland birds are ground nesters and construct nests in shallow depressions on the ground concealed in thick vegetation of grasses or shrubs. Composition of the diets vary by species but upland birds forage on a variety of plant parts along with insects, such as grasshoppers, beetles, and ants. Flowering plants are a main food source and have very high nutritional content.

Throughout its range, sage grouse (Bureau Sensitive) is a species of high public interest and may be petitioned for federal listing as either a threatened or endangered species. National interest and concerns have led BLM to work with state and federal agencies and private interest groups to develop short term management guidelines. Current efforts are now formulating on long-term management goals and objectives for sage grouse.

Sage grouse is a western bird that relies primarily on sagebrush for its nutritional and habitat needs and is considered an "obligate species" or "indicator species". This means their population success can be directly tied to the environmental conditions of the sage steppe habitats they occupy.

Sage grouse are found throughout the range of big sagebrush, but numbers throughout the west have been declining for many years. These declines are primarily due to loss, degradation, and fragmentation of habitat (Wallestad 1975a). From the late 1800s through 1931, excessive harvest of sage grouse and degradation of habitat from improper livestock grazing caused severe declines of sage grouse populations (Edminster 1954). By 1940, sage grouse occupied only half their historic range in Oregon and numbers declined 60 percent between the late 1950s and the early 1980s (Crawford and Lutz 1985). These declines led the USFWS to list the western subspecies of sage grouse as a candidate for threatened and endangered status (Federal Register, 18 September 1985).

Sagebrush is the most important plant for sage grouse because they use it for food and cover all year long. Grouse like to eat small flowering plants (called forbs) when available, usually from early spring to mid summer. Forbs grow in the sagebrush plant community, contain high nutrient levels, and are easily digestible.

Sage grouse prefer large blocks of sagebrush habitat in late seral condition. Association with dense sagebrush stands typically begins in September and continues through the breeding season. Wintering areas are crucial to sage grouse because they are a major factor in determining their distribution. Elimination of winter range habitat can reduce sage grouse populations over large areas (Eng and Schladweiler 1972).

Quality nesting habitat is one of the most important factors in the success of sage grouse populations. A primary function of nesting habitat is the protection of the hen and her nest from predation, which is the primary factor influencing sage grouse nesting success in Oregon (Batterson and Morse 1948, Nelson 1955). While predation may be the most immediate cause of nest failure, the underlying cause may be a lack of adequate cover at nests that makes them easier to see and more vulnerable to predation (Gregg *et al.*, 1994).

The BLM manages approximately 90 percent of the lands currently inhabited by sage grouse (USDI Bureau of Land Management, 1994b). Beginning in the 1940s, the Prineville District BLM, in cooperation with ODFW, has monitored sage grouse populations through annual strutting ground (lek) counts. Approximately 19 percent of the northern planning area is currently used by sage grouse and is mapped as sage grouse range (See Map S-12: Sage Grouse Habitat). Within the planning area, grouse occur in the Skeleton fire area, Millican Valley, West Butte, Bear Butte, and Pine Mountain. This population is considered to be located on the western fringe of their range.

In the planning area, grouse numbers have varied over the years due to several factors including: drought, predation, habitat loss and degradation, and natural population fluctuations. In Oregon, the BLM Prineville District began a sage grouse study in 1988 because of declines in the number of males on leks. The purpose of the study was to define seasonal use areas and determine the over wintering population.

These studies have identified several important seasonal use areas, located new strutting grounds, and helped determine grouse distribution and suitable habitat types. Currently, four leks are used for breeding. The largest occurs in Millican Valley. Used year after year, these sites are important to protect for future use. Studies in Wyoming indicate that disturbances on and around the lek that removes substantial vegetation could affect the local populations to the point of extinction (Higby, 1969).

The local studies have found that most nesting occurred in the higher elevation areas surrounding Millican Valley. Important nesting areas included Pine Mountain, Horse Ridge, West Butte, and Bear Butte. Sage grouse nest in the mountain big sagebrush, mountain shrub, and grassland cover types, and the nest center of successful nests had taller grass and more tall shrubs than the nest center of unsuccessful nests (BLM, 1994). Habitat structure appeared to be as important to nest success as habitat type. These same high elevation areas are important for brood rearing as well, where forbs were more abundant and available throughout the summer.

Millican Valley is a very important area for the winter survival of sage grouse where over 100 birds spend their winter. Comparatively mild weather and fairly good sagebrush cover is the primary reason for this seasonal use.

Habitat quality is variable within the known use areas. The low elevation valley floors have a large component of annual plants and rabbitbrush, which is not ideal habitat for sage grouse but does provide cover during winter and forage during the early spring. The higher elevation areas are in good to excellent condition and have an abundance of important forbs.

The greatest effect on sage grouse is the destruction or adverse modification of their habitat. During the past 40 years, sagebrush valleys and foothills have been sprayed, plowed, chained, burned, disked, or cut in an attempt to convert these ranges to

grasslands. Recent habitat protection and prescribed burns appear to be benefiting the sage grouse in the planning area. In the Millican and West Buttes area, a large percentage of lands are in mixed ownership between BLM-administered and private lands.

Lek viewing has become popular in the Millican area. BLM has been monitoring established viewing opportunities since 1995. Disturbance of grouse by observers during courting and breeding have prompted viewing restrictions to allow grouse to complete breeding. Recent management efforts have resulted in better viewing and less disturbance to the birds.

Vegetation management projects have been done to improve sage grouse habitat. In the Horse Ridge and West Buttes area, projects such as prescribed fire, lek mowing, and water developments have improved habitat for sage grouse.

Mountain quail (Bureau Tracking) prefer open forests and woodlands with a brushy understory (Csuti *et al.*, 1997). In eastern and Central Oregon, these quail can be found in close association with riparian areas or meadows next to forest edges. Their preferred diet consists of buds and flowers, berries, and insects such as grasshoppers, beetles, and ants. During winter, seeds of a variety of plants make up most of the diet. Mountain quail are ground nesting birds and generally have very small home ranges (often staying within 1 square mile).

Mountain quail were once abundant throughout many areas in central and eastern Oregon. Numbers have been declining for several decades (ODFW, Bend), and the factors causing these declines are not fully understood. Although not common, mountain quail exist in several areas within the northern planning boundary. Small populations can be found in and near Bear Creek, Prineville Reservoir, on scattered parcels of BLM-administered lands north of Prineville, and north and east of Sisters. These quail exist in drainages with some amount of shrub type vegetation, brushy areas at the base of rim rock ledges, and around brushy seeps or springs. The planning area has not been surveyed for mountain quail and their population size and distribution is poorly known. Although mountain quail are a game bird in Oregon, most populations in eastern Oregon are closed to hunting with exception of Wallowa and Hood counties.

Other Bureau Sensitive Birds

The pygmy nuthatch (Bureau Sensitive) is one of three resident nuthatches that occurs in the planning area. The pygmy nuthatch uses open coniferous woodlands. In Oregon they are believed to be tied to ponderosa pine communities. This is a cavity nesting species that creates its own nest sites and typically feeds on insects.

The Olive-sided flycatcher (Bureau Tracking) is found in several locations in the planning area. Although not found to be abundant, this flycatcher can be seen in forest habitats near La Pine, Bend, and Redmond. It is suspected to occur on BLM-administered lands north of Sisters. These birds like to forage on bees, flying ants, flies, small beetles, mosquitoes, and other flying insects (Csuti *et al.*, 1997). No surveys have been conducted for this species, therefore population size and range are unknown.

Willow flycatchers (Bureau Tracking) are less common in the planning area. Typical habitat occurs around willows at the edges of streams, meadows, and marshes. This bird prefers thick vegetation around water. Except for the major river corridors and a few ponds and canals, preferred habitat does not occur in quantity or quality. No surveys have been conducted for this species, therefore population size and range in the planning area are unknown.

Sage sparrows (Bureau Tracking) are considered sagebrush obligates. Although sage sparrows can be found in grasslands they are usually not far from sage stands. Sage

sparrows eat soft bodied insects, green foliage, and seeds usually found on the ground (Csuti *et al.*, 1997). Sage sparrows are common in the pure stands of big sagebrush near Millican and Horse Ridge area, the Badlands WSA, and west of Redmond. Sage sparrow populations are thought to be declining throughout its range. No surveys have been conducted for this species in the planning area; therefore population size and range are unknown.

White-headed woodpecker (Bureau Sensitive), a species of concern, is found in both the La Pine area and the northern portion of the planning area. This species is closely associated with ponderosa pine or ponderosa mixed conifer stands (Csuti *et al.*, 1997). It requires large trees for foraging and snags for nesting, both characteristics of older forest stands. The woodpecker forages mostly on insects and seeds of ponderosa pine. Known occurrences of this bird have been documented around Pine Mountain, scattered BLM-administered lands north of Sisters, and in the La Pine area. No surveys have been conducted for this species in the planning area; therefore the extent of the population range and size is unknown.

Black-backed woodpeckers (Bureau Sensitive) normally occur in forests of fir, lodgepole and ponderosa pine, or mixed conifers (Csuti *et al.*, 1997). Diet consist of wood-boring beetle and their larvae, ants, spiders, and occasionally fruit, bark, seeds, and cambium. Surveys conducted by BLM personnel in the La Pine block found that the black-backed woodpeckers are common to abundant throughout the area.

Three-toed woodpeckers (Bureau Sensitive) also occur in La Pine but in fewer numbers. These birds were found using lodgepole pine and ponderosa pine habitats. The abundance of wood boring beetles in this area is most likely the reason these woodpeckers occur here. Potential habitat occurs north of Sisters, but no surveys have been conducted. Burned areas that occur in the La Pine area provide feeding and nesting potential for three-toed and black-backed woodpeckers. Lack of fire on BLM-administered lands has not allowed for habitat improvement for these species of woodpeckers.

The Lewis woodpecker (Bureau Sensitive) occurs occasionally in both the northern planning area and the La Pine block. Typical habitat is in white oak woodlands, but they are also found in ponderosa pine and cottonwood riparian woodlands in eastern Oregon (Csuti *et al.*, 1997). Their diets consist of beetles, ants, grasshoppers, flies, and spiders. Lewis woodpeckers occur around the cities of Bend, Redmond, and La Pine and along the Deschutes River corridor. No surveys have been conducted for this species; therefore the extent of the population range and size is unknown.

Yellow rail (Bureau Sensitive) occurs occasionally in the planning area. Observations have been made in the La Pine area and in ponds and canals near Redmond. Typical habitat is freshwater marshes and wet meadows with a growth of sedges and willows and shallow bodies of water (Csuti *et al.*, 1997). Although this bird occurs in small numbers, pairs have been found breeding and raising young in Central Oregon (Schmidt, personal communication). No surveys have been conducted for this species, therefore the extent of the population range and size is unknown.

The Upland Sandpiper (Bureau Sensitive) has potential habitat in the La Pine block and there has been a single sighting there (Demmer, personal communication). This species occupies flooded meadows and grasslands, usually with a fringe of trees and often near high elevation sagebrush stands (Csuti *et al.*, 1997). No surveys have been conducted for this species, therefore the extent of the population range and size is unknown.

Neo-tropical Migrants

Though many of the birds previously listed are neo-tropical migrants, this discussion is on the broader species of birds that breed and raise young in the planning area in the spring and summer, then migrate south to areas in Mexico and South America during the fall and winter. These birds range from small sparrows and warblers to large woodpeckers and raptors.

Recognized as one of the most important habitats for these birds are the riparian plant communities lining the rivers, creeks, and irrigation canals. Relatively minor in terms of total acres in the planning area (only 1 percent of landscape), these areas provide breeding habitat for more species of birds than any other vegetation type in North America. Up to 75 percent of bird species breed in riparian zones (Johnson and O'Neil, 2001). Primarily in deciduous riparian woodland, abundance of breeding birds can be 10 times greater than the surrounding uplands.

As previously described in the vegetation section, the shrub zone and its associated understory vegetation provides the basic habitat needs for a vast number of wildlife species. In addition, the unique presence of the juniper woodlands, in both its natural old-growth form and the younger invasive type, provides more structure to the environment, which many wildlife species find attractive.

Many species of breeding birds are dependent upon sagebrush as their primary habitat. Several passerine birds depend on shrubs for most of their life cycle. These birds nest in the fields and forage on seeds, buds, or insects in the area. Pure stands of big sagebrush occur in the Millican and Horse Ridge area, the Badlands WSA, and west of Redmond. Certain species are "sagebrush obligates", which means they depend on sagebrush for cover and forage for part or all of their life cycle. Species common in these habitats include sage, Brewer's and vesper sparrows, sage thrashers, and green-tailed towhees. Horned larks are abundant throughout the planning area in the shrub-steppe zones.

The low sagebrush areas located near Prineville and the Bear Buttes area are in excellent range condition, rich in forbs, and are providing important foraging areas for neo-tropical migrants.

Old-growth juniper woodlands provide valuable wildlife habitat for a diverse mix of species. As a juniper tree matures and becomes decadent, structural changes occur which result in hollow cavities and other protected niches where birds can take shelter, nest, and rear their young. Many bird species forage on juniper berries. Wildlife studies in Central Oregon have determined that old-growth juniper attracts a high diversity and abundance of wildlife, including mountain chickadees, Cassin's finches, shipping sparrows, dark eyed juncos, house finches, mourning doves, brown-headed cowbirds, ash-throated flycatchers, pinyon jays, northern flickers, and red-breasted nuthatches.

In La Pine, dead standing trees or snags are widely recognized as essential habitat for many wildlife species. Retention of snags and downed logs is needed to support cavity-nesting species such as hairy and white-headed woodpeckers, pygmy nuthatch, and mountain chickadee. Grasses, forbs, and shrubs typically invade in the treated forest areas. These areas provide habitat for a unique subset of wildlife species. Ongoing changes to these important plant communities, many of them caused by humans, have resulted in alterations to the habitat within the planning area. Encroachment of juniper is converting shrublands to woodlands, primarily because of changes in natural fire regimes.

The loss of vegetation reduces forage needed for wildlife and livestock, as well as habitat for ground nesting birds. Juniper dominated sites can eventually reach a point where understory vegetation is sparse and will not carry fire, and remnant grasses and

forbs are not capable of repopulating the area even if the juniper were removed. Species composition has been altered in these areas throughout the planning area.

Mammals

Bats

Bats are a unique form of terrestrial animals whose consumption of a variety of insects makes them an important part of the ecosystem. There are two types of bats in Oregon, colonial type bats like the little brown bat, pallid bat, Brazilian free-tailed bat, western pipistrelle, and the solitary types, including the hoary bats, and silver-haired bats. Although, some bats use trees for roosting, most bats rely on a variety of non-tree like structures including cliffs, lava outcrops, caves, mines, bridges, and buildings (Perkins 1984).

Management of bat populations involves ensuring the availability of roosting and foraging areas (Perkins 1996). The diet of most of the bats in the planning area includes cutworm moths, pine bark beetles, crane flies, biting flies, and mosquitoes (Perkins, 1996). In urban areas, most bat species are found in smaller numbers and at fewer locations when compared to rural locations. This may be the result of lower insect numbers and diversity (Johnson and O'Neal 2001). Except in a number of known caves, little is known about the distribution and species diversity of bats in the planning area.

In the planning area, mines, cliffs, caves, lava tubes and lava outcrops are the key habitats for a variety of bats. Bats may use these habitats in several ways. The most obvious use is as a daytime resting place (roost) for these nocturnally active animals. This occurs during the warm part of the year when they are most active. Another use during this time of year is as a temporary resting place at night between foraging bouts. Such use may vary seasonally depending on the ability for year round protection from weather and predators. Sometimes, an infrequently used summer roosting site will be attractive to bats in the fall, especially at night, when they congregate for breeding. Caves provide year round habitat but are a major source for hibernaculum of dormant bats during the winter. Most species have specific habitat requirements for such use and will use different parts of a cave depending on temperature and other factors. Perkins (1986) pointed out that cave habitats in Oregon have not been managed specifically as habitat for bats and have been subjected to increasing human disturbance, which could result in a decline of available habitat for bats. Inventories to determine the distribution of the Townsend's big-eared and other bat species on BLM-administered lands are needed before habitat protection can be provided.

Disturbances from humans and domestic cats are major problems for bats in urban setting, because of disturbances to night roost sites, maternity sites, and hibernacula's. Bats use snags and large trees with structural defects for roosting, and typically use areas with less canopy closure and understory vegetation and are close to water.

A mist netting survey conducted by Cross in 1976 (A Survey of Bat Populations and Their Habitat Preferences in Southern Oregon) revealed 10 species of bats found on BLM-administered lands. These species included Townsend's big-eared, big brown, silver-haired, pallid, California myotis, long-eared myotis, small-footed myotis, long-legged myotis, little brown myotis, and the yuma myotis. Perkins surveyed historical hibernacula and roost site locations in 1986 (Central Oregon Survey for Townsend's Big-Eared Bat) and Rodhouse (2004) documented spotted bats.

Townsend's Big-Eared Bat (Bureau Sensitive) has received special attention from local biologists. These bats occur in a wide variety of habitat types from arid desert shrub

communities to pine forests. This species uses caves and cave-like structures, including abandoned mine shafts and tunnels for summer roosting and hibernating or wintering habitat. Caves are an important component of this bat's habitat requirements, both as a hibernaculum in the winter and as roosts for summer nursery colonies. They also require wet meadows and riparian areas where they can forage for flying insects. Habitats free from human disturbance are apparently required by this species. Surveys have been conducted in many areas within the planning boundary. More than 25 percent of the entire population of this species occurs in Central Oregon.

The spotted bat (*Euderma maculatum*), a Bureau Assessment species, is one of the rarest bats in North America and was only recently documented in the planning area (Rodhouse 2003). These bats, distinctive for the three large, white spots on their backs, are found in a wide range of habitats; though they typically occupy rough, rocky, and semi-arid to arid terrain. They are commonly associated with a variety of plant communities, including sagebrush and juniper. Rocky cliffs and natural cave sites with deep crevices are important habitat for this species, serving as protective day roost sites as well as maternal roost sites. No literature describing the hibernacula needs for this species has been found. Foraging requirements include water; however, in addition to meadows, marshes, ponds and streams, spotted bats have also been discovered foraging over stock ponds and other artificial water sources.

Eight additional bats have Bureau status including two Bureau Assessment (Brazilian Free-tailed bat) and six Bureau Tracking species (pallid and silver-haired bats, western small-footed, long-eared, long-legged, and yuma myotis bats). Surveys conducted in a variety of locations in the planning area have shown some of these bats to occur. The majority of the species can be found in the area associated with caves and lava formations. The silver-haired bat is the only one that is dependant on trees for roosting (Perkins and Cross 1988). During the summer months, many of these bats can be found near persistent water sources. Surveys at Reynolds and Mayfield ponds found bats to be abundant near these sources in June through September (Perkins 1996).

Although several surveys have been conducted in the planning area, the full extent of the population range and abundance of these sensitive bat species has not been determined. Special management areas have been implemented which closed several caves to human uses and protects known populations of bats using the caves as a hibernaculum and for nursery purposes.

Mule Deer

The public has a high level of interest in mule deer for hunting and viewing (Wallmo, 1981). However, in some suburban and agricultural areas, the deer can become a pest, as they feed in alfalfa fields, home gardens, and browse residential shrubs. Mule deer are the most numerous, adaptable, and widely distributed of the large mammals. The majority of mule deer found in the planning area are part of the migratory herd that migrates through or use seasonal winter ranges. Local herds that reside year-round are usually located near agricultural areas.

Adequate food, water, and cover are essential to the survival of deer. Where food, cover, and water are close together, the range of individual deer is small. However, home ranges of resident mule deer can be large. If snow conditions make higher elevations unsuitable, deer will move to suitable range in lower elevations. In general, higher elevations are used as summer ranges and areas below 4,500 feet are considered winter range (See Map S-9: Deer Habitats). Seasonal movements and routes can be critical to maintaining migratory habitat.

The value of timberland for deer is proportional to the degree that it is broken and interspersed with openings. Deer numbers on forested lands are usually highest where openings that support low-growing palatable shrubs and forbs are scattered through the forest.

Thermal cover is critical on winter range to provide protection from wind and other adverse elements. Grassy slopes, meadows, brush fields, and other early successional stages provide the majority of deer forage. During hot summer weather thermal cover provided by late, mature, old-growth seral stage forests, and juniper/big sage/pronghorn bitterbrush shrublands provide shade and reduce heat stress on the animals.

Habitat conditions on the winter ranges within the planning area vary considerably and are site-specific. It is generally recognized by wildlife biologists and range managers that it is extremely difficult to precisely measure habitat condition and productivity and even more difficult to relate these measures to herd parameters (Carpenter and Wallmo, 1981). The winter range is primarily juniper woodland and sagebrush communities with interspersed grasses. Browse is the major component of the winter diet, primarily pronghorn bitterbrush, big sagebrush, and western juniper.

While comprehensive monitoring data is lacking on browse condition and habitat condition and trend on mule deer range, it is known that the type, amount, and condition of vegetation have changed due to aggressive fire suppression. Due to fire suppression on some mule deer wintering areas, bitterbrush is old and dying and little reproduction is occurring. There is very little reproduction in the stands in the form of seedling establishment and many of the browse plants are growing out of the reach of deer. The stands are still producing some browse for wintering deer and the decaying and dead plants are providing valuable thermal and hiding cover.

A minimum cover to forage ratio of 30 to 70 was set in a Memorandum of Understanding with ODFW in 1990 to protect deer, elk, and pronghorn migratory habitat. Desired cover to forage ratios are documented at 40 to 60 by Thomas *et al.* (1979) and at 45 to 55 by Leckenby *et al.* (1982). On the mule deer migration corridor areas near La Pine State Recreation Area and south from La Pine, 51 percent and 37 percent respectively, of BLM-administered land remains as hiding cover. However, stands are deficient in meeting cover requirements because of the long distances that animals must travel between patches.

In the planning area four mule deer winter ranges have been identified by ODFW and nine winter areas that have been designated by BLM as crucial deer winter range. Mule deer winter range is identified because it is important to the health of the mule deer population.

Mule deer migration corridor in the La Pine management area receives use by 21,500 migrating mule deer annually (ODFW, 2001). Mule deer descend from summer range on the eastern slopes of the Cascades to their lower elevation winter ranges. Use is concentrated in the area immediately south of Lava Butte near the La Pine State Recreation Area and between La Pine and Gilchrist. Mule deer populations are presently below ODFW management objective numbers.

South of U.S. Highway 20, approximately 5,360 acres of public land lies within the boundary of the Tumalo Mule Deer Winter Range. The management objective for this area is to maintain 2,500 deer. Currently, numbers are just under the objective. Motorized vehicle use has been restricted from December 1 through March 31 annually on many roads within the winter range. Motor vehicle use disturbs wintering mule deer during this time.

The North Paulina Winter Range includes 3,750 acres of public land in the Bend-Redmond management area. The management objective for this area is to maintain 5,500 deer.

The northern portion of the Cline Buttes management area contains 9,240 acres designated as a portion of the Metolius Mule Deer Winter Range. The management objective for this area is to maintain 6,200 deer.

The Smith Rock management area is designated by ODFW as mule deer winter range. An estimated 175 mule deer use this area. However, the area is believed to be capable of supporting approximately 200 wintering mule deer (ODFW, 1994). Mule deer use a combination of both public and private lands, including the adjacent Crooked River National Grassland (CRNG) of the Ochoco National Forest.

Mule deer and elk frequent many areas around La Pine. Two major migration corridors have been identified in the La Pine area. These two corridors run for approximately 15 miles starting about 4 miles north of La Pine down to just north of Gilcrest. These corridors serve as connective habitats for the winter movement of animals traveling from the Cascade Mountains east to their winter ranges.

Harassment of deer by humans using motorized vehicles during stress periods, such as cold winters and hot summers can impact deer but it is difficult to quantify. Seasonal road closures are important to protect wintering deer from harassment and to protect wildlife habitat from trampling impacts. The road closures are in effect each year from December 1 through March 31 and have been successful in reducing harassment and poaching.

Fall transition ranges are similar in their composition of vegetation to summer ranges and include coniferous forest/shrub communities. Deer tend to remain at the highest possible elevations until forced on to winter concentration areas by snowfall.

As the human population increases in the urban interface, conflicts with wintering and resident mule deer have also increased. Developments which subdivide the land restrict passage by mule deer and Rights-of-Ways issued on public land bring humans into closer contact with wildlife. In some suburban and agricultural areas, the species can become a pest, as it feeds in alfalfa fields, home gardens, and browses residential shrubbery. In areas where public and private ownership are interspersed, BLM-administered lands often serve as habitat islands for wildlife. Mule deer may forage on adjacent private alfalfa fields but retreat to BLM managed land for safety and cover.

Rocky Mountain Elk

Elk can be found throughout the planning area in all vegetation types. Although juniper woodland is not considered "ideal" habitat, elk have adapted to this environment and have been rapidly expanding in this area for the past 10 to 20 years. A combination of factors has increased foraging opportunities for elk and may be contributing to their expansion in the area. The development of agriculture and small ranches adjacent to large blocks of BLM-administered lands provide green forage and increase the availability of water nearly year round. Healthy populations of elk in the Ochocos have been expanding into juniper and sagebrush habitats during the past 15 years.

Additionally, habitat improvement projects on BLM-administered lands have made these lands more attractive to elk. Juniper management, timber harvest, heavy fuel reductions, prescribed burns, natural wildland fire, guzzler installations, native shrub and grass plantings, and increased travel management restrictions have all contributed to better habitat conditions attractive to local elk herds.

Elk are considered grazers and mainly feed on grasses. During the spring and summer, elk forage on a variety of plants including forbs and grasses, and in the winter, they use sagebrush, bitterbrush, grasses, and agricultural stubble.

Although elk occur throughout the planning area they are most abundant in areas east of U.S. Highway 97 and in the La Pine area. Elk tend to occur in small groups but can also be found in herds of 150 to 200 animals. Resident herds are most often found in areas around the Badlands, West Butte, Powell Buttes, Mayfield Pond/ Alfalfa area, Millican Plateau, Combs Flat/Juniper Canyon area, Ochoco Reservoir, and Prineville Reservoir.

During the winter, elk concentrate in larger herds and several wintering areas have been identified and are recognized as important by ODFW. ODFW conducts surveys twice a year, during August and early March, to determine herd composition and productivity. Elk numbers are currently at 20 percent above the management objective for this area.

In the Powell Buttes, Mayfield Pond, and Alfalfa areas disturbances such as old burns, seeded gas pipeline rights-of way, and restoration after military use has created increased foraging opportunities here during the past decade. Limited public access, rough road conditions, large blocks of undeveloped lands, and relatively low human disturbance are probable factors for the successful establishment of this herd.

Another large grouping of elk occurs in the northern part of the Badlands extending north through the Millican Plateau, West and Bear Buttes, and sometimes across U.S. Highway 20 into the Horse Ridge area. These animals generally occur as two groups totaling about 250 to 300 animals. The largest numbers of animals use the Millican Plateau between Reservoir Road and Prineville. Habitat here is big sagebrush mixed in old growth and invasive juniper woodlands. Disturbances such as old burns, crested wheatgrass seedings, juniper cutting on private and BLM-administered lands, and large power line corridors have created increased foraging opportunities here during the past decade of elk expansion. Road densities are higher in this area than surrounding areas, but off-road use is currently limited to designated roads and trails associated with the Millican OHV area. Several wildlife guzzlers occur in this area providing water year round.

In the Combs Flat/Juniper Canyon, Eagle Rock/Prineville Reservoir areas ownership is a mix of BLM, state and private lands. This area is mostly private ranches. The elk in this area occur in scattered groups for most of the year but congregate on agricultural fields during the summer and fall months. Only small isolated tracts of BLM-administered lands occur north of Ochoco Reservoir. The habitat here is a mix of pine, juniper, and big and low sagebrush.

Herd migration and intermixing opportunities are limited throughout the planning area due to increased development of private lands and the mixed ownership pattern. Elk do not tend to use distinct travel corridors but in some areas have developed trails from hiding cover to foraging areas. Increasing human development has resulted in increased density of fences on private lands designed for livestock containment or protection of structures, which forces animals around private lands.

Conflicts have started to arise with the expanding elk populations. When disturbed, elk run through fences instead of jumping over them causing property damage. In the summer and fall these elk travel in large groups and when grazing in agricultural fields they can damage crops, resulting in financial losses for ranchers. Elk are found using agricultural fields throughout the entire planning area.

There are approximately 200 to 250 elk using in the Clines Buttes area (west of 97 in the northern planning area). These animals often travel throughout the area between Tumalo, Cline buttes, and the Lower Bridge area. These animals use BLM and Forest Service

lands for hiding, escape and resting cover, while foraging on agricultural lands. Herd sizes vary but elk generally travel in groups of 30 to 40 animals and sometimes use small local areas. Elk numbers are currently exceeding the management objectives for the area and the number of crop damage complaints is rising in the area (Steven George, ODFW, personal communication). Seasonal use areas and important wintering areas have not been determined for these animals. Additionally, there are no distinct migration routes in this area, and the elk don't stay in one particular area for very long.

Elk numbers have been increasing in the La Pine area during the past 10-12 years. The Brothers/ La Pine FEIS/PRMP states that in 1982 the number of elk was around 70 animals. Currently 150 to 200 elk reside in and around the La Pine and frequently cross U.S. Highway 97 because the most dependable water sources are the Little Deschutes River, wet meadows, and springs located west of the river.

Timber cutting in the area has created ideal cover to forage ratios encouraging the elk to stay in the area. Increasing bitterbrush, grass, and forbs in the treated areas has added enabled the elk to flourish. Elk use the same corridors as deer in areas with sufficient connective habitat.

BLM-administered lands are scattered throughout the Grizzly Mountain and Grey Butte areas where elk use undisturbed private lands and the national Grasslands. Herds have been expanding in this area and crop damage is a concern here as in the other areas.

Pronghorn

Pronghorn can be found throughout the planning area in juniper occupied shrub zones. Although juniper woodlands are not considered "ideal" habitat, like the elk, pronghorns have adapted to this environment and have been increasing in this area for the past 10-15 years. Certain types of disturbances in local areas have increased foraging opportunities for pronghorn that may be contributing to their expansion in the area. Possible features or disturbances attracting pronghorn into juniper shrublands are water availability, crested wheatgrass seedings, and natural and prescribed fires, agricultural fields, forb rich disturbed areas, and large blocks of undeveloped lands.

Typical pronghorn range is an open sagebrush environment that is rich in broad-leaved herbaceous vegetation. Pronghorn forage primarily on forbs and grasses during the spring and early summer. The rest of the year, they depend upon sagebrush, bitterbrush, and grass. Low sagebrush is usually an important component of their habitat and diet but occurs in only 8 percent of the planning area.

Pronghorn are usually found in close proximity to water, which is sparsely distributed throughout the area. Climates that reflect the best habitats and productivity are in areas that receive 10-16 inches of precipitation per year (Sundstrom *et al.*, 1973). The average local precipitation levels vary across the pronghorn habitat in the planning area from 8.62 inches per year in Redmond to a high of 11.70 inches per year in Bend. Average precipitation is about 10 inches per year in the Millican and Prineville areas (State Climate Data).

In the planning area, home ranges of summer herds vary from 10 to 20 square miles and pronghorn generally form small groups of 4 to 10 animals. During winter pronghorn gather into larger herds using specific geographic areas. Several of these wintering areas have been designated as crucial winter range for pronghorn by ODFW and BLM. Winter home ranges tend to be smaller except for temporary movements. During winter, pronghorn have been seen migrating in large groups (up to 130 animals) between winter areas, but usually for short periods of time.

During the past several years, ODFW has conducted surveys during August and early March to determine herd composition and productivity. The BLM and ODFW have used this pronghorn census data and other observation data to map the potential pronghorn habitat in the planning area, and the current known use areas. Pronghorn currently use 40 percent of their potential habitat in the planning area.

Pronghorn productivity and recruitment is low within the planning area compared to typical “open range” habitats more common to the Great Basin area to the east and south of the planning area. Common factors that can limit productivity are predation, fences, distribution of water, and low precipitation levels causing poor forage quality (Ferrel, 1952). Deming (1959) believed that climate and range conditions were possible reasons for low pronghorn productivity on marginal ranges, with noticeable increases during wetter years.

Approximately 500 pronghorn reside in the planning area and are a common sight on the landscape east of U.S. Highway 97, and occasionally in the La Pine area. Except during winter, pronghorn generally occur in small groups and use specific areas made up largely of BLM-administered lands. These local herds are found year round in five land areas: Redmond/Mayfield Pond/Alfalfa area; Millican Plateau; West Buttes/ South Millican/ Skeleton area; Combs Flat/Juniper Canyon area; and north of Ochoco Reservoir.

Pronghorn are dispersed throughout the planning area but usually occur as distinct herds using general geographic areas. The Redmond/Alfalfa herd ranges from 130 to 150 animals and uses BLM-administered lands southeast of Redmond. There is little use north of State Highway 126 in the Redmond area but occasional movement of animals across the highway occurs.

Directly south of Redmond a herd of 50 to 60 pronghorn reside year round and occur mainly in the area between Powell Butte highway and the railroad tracks just east of U.S. Highway 97. This herd mixes with an additional 80 to 100 pronghorn that use the area extending south and east of Powell Butte highway into the Mayfield Pond and Alfalfa areas. Disturbances such as old burns and seeded gas pipeline rights-of-way, have created increased foraging opportunities here during the past decade. Low road density, limited public access, rough road conditions, large blocks of undeveloped lands, and relatively low human disturbance are probable factors for the successful establishment of this herd.

Another large grouping of pronghorn occurs in the northern part of the Badlands extending north through the Millican Plateau up to State Highway 126 between Powell Butte and Prineville. These animals occur as two groups totaling about 160 animals. The largest proportion of animals uses the Millican Plateau between Reservoir Road and Prineville. Low sagebrush is a component of the Plateau that pronghorn use year round. Disturbances such as old burns, crested wheatgrass seedings, juniper cutting on private and BLM-administered lands, and large power line corridors have created increased foraging opportunities during the past. Road densities are higher in this area than surrounding areas, but use is currently limited to designated roads and trails associated with the Millican OHV area. Several wildlife guzzlers occur in this area providing water year round. The area east of Millican/West Butte Road is designated as crucial pronghorn winter range and is used heavily during winter.

West Butte, South Millican and the Skeleton Fire area support approximately 125 pronghorn. These animals are dispersed in small groups throughout the spring, summer and fall months, but tend to congregate in a large group in South Millican during winter. Portions of their use areas have been previously designated as crucial pronghorn winter range in the Brothers/La Pine FEIS/PRMP.

The West Butte/Millican herd often mixes with pronghorn outside the planning area towards Brothers. The Millican and Skeleton Fire areas are open sagebrush environments that are more typical pronghorn habitat, and are connected to the Great Basin range where pronghorn occur more frequently across the landscape. Foraging opportunities are abundant in South Millican and within the Skeleton Fire area. Water is limited in this area and pronghorn use water from guzzlers, stock troughs, snow pack, and occasional rains.

The Combs Flat/Juniper Canyon area supports a local pronghorn herd of about 75 to 100 animals. In this area, ownership is a mixture of BLM-administered, State, and private lands but it is mostly private land ranches. In this area pronghorn occur in scattered groups for most of the year but congregate into agricultural fields during the summer and fall months. Low sagebrush and early seral areas provide the main foraging areas for this herd. Crucial winter range designations have been made in the Combs Flat area on both sides of the Paulina Highway.

Only small isolated tracts of BLM-administered lands occur north of Ochoco Reservoir where a herd of 30 to 60 pronghorn live year round. Pete Creek, mostly in private ownership is the center of activity for this herd. The habitat here is a mixture of pine, juniper and big and low sagebrush. Little is known about the movement and local habits of these pronghorn. There are occasional sightings of pronghorn crossing U.S. Highway 26 south into the Comb Flat area, suggesting that there is some mixing of the pronghorn herds.

Herd migration and intermixing opportunities are limited throughout the planning area due to increased development of private lands and the mixed ownership pattern. Crossing structures such as roads and range fences are all common barriers to pronghorn movement, which can have a negative effect on pronghorn mobility. Increased human development has resulted in increased density of fences on private lands designed for livestock containment or protection of structures, which forces pronghorn around private lands.

Travel corridors tend to occur in condensed areas between Powell Buttes and the Millican Plateau north of Alfalfa; south of Alfalfa into the Badlands and across U.S. Highway 20 into the Horse Ridge and Skeleton Fire area. The West Butte provides a central pivot point in which pronghorn can disperse to the Millican Plateau, the Badlands, south Millican and east towards Brothers; and the Combs Flat/Juniper Canyon area to the north of Ochoco Reservoir and U.S. Highway 26.

The Crooked River National Grassland, immediately north of the planning area towards Madras, is home to 100 to 200 animals. Occasionally these animals have been seen in the Terrebonne area suggesting that these animals could intermix with the Redmond herd.

Big Horn Sheep

California big horn sheep were common throughout Central Oregon in the early 1900s when they apparently disappeared as a result of disease (from domestic sheep) and over hunting. A healthy population once occurred in the Crooked River Gorge in the vicinity of Crooked River Ranch. Federally, the California big horns are a species of concern, but many populations in the state are thriving well in areas where they have been reintroduced.

Typical habitat for big horns is composed of sagebrush-grassland found in steep rocky mountain ranges, foothills, river valleys, canyon gorges and escarpments. These rugged areas provide escape, lambing, breeding, and foraging habitats and thermal protection. Sheep are dependant on water using any source available. Their home range varies from 7 to 15 square miles. Sheep are active throughout the year and form small dispersed groups during spring and summer and congregate in larger groups during winter. The

diet of the big horn sheep consists, primarily, of grass, especially bluebunch wheatgrass and cheatgrass. However, their diet can change seasonally, from grasses and forbs in the spring to woody shrubs in the winter.

ODFW conducted a statewide inventory of current and historic range for big horn sheep and the current habitat conditions. They prioritized suitable areas for re-introduction of big horn sheep. The Crooked River Canyon was determined to have suitable habitat for a population of approximately 75 sheep. This area is currently ranked number one for the next potential release site.

The Crooked River Canyon near Crooked River Ranch is currently occupied by feral sheep descended from mouflon, Barbados and Hawaiian sheep introduced several decades ago. Approximately 100 of these animals roam throughout Crooked River Ranch, and are loved by some residents, but a pest to others. These sheep can carry the disease *Pasteurella*, which is considered deadly if contracted in native big horn sheep. Land ownership in the area is mainly BLM-administered lands mixed with private land and CRNG lands. The feral sheep use the Crooked River Ranch area and stay mainly in the canyon on BLM-administered lands but will frequently use water and feed on private lands adjacent to the canyon.

Pacific Fisher

The fisher (Bureau Sensitive) is a medium sized carnivore found in forest lands across North America. Fisher populations are extremely low in Oregon (Aubry and Houston 1992). Typical habitat is mixed coniferous forest, and lodgepole pine forests. They prefer mature forest or late-seral forest conditions, and often occur near or along riparian areas. High canopy closure is an important characteristic of their preferred habitat.

Fishers are general predators, and will eat a variety of small to medium-sized mammals and birds. They also will readily eat carrion, fruits and mushrooms. The actual composition of the diet in fishers varies by region depending on the most abundance prey in an area. Young fishers tend to eat more fruits than adults. Snowshoe hares are a major prey item almost everywhere that fishers have been studied. Female fishers raise their young in protected den sites, usually in hollowed out trees or logs.

Ideal habitat does not occur in La Pine although potential habitat does exist. Much of the La Pine area has been set back to an early successional stage due to timber harvest and fuels reduction projects. These habitat conditions are not considered ideal for fisher and the preferred prey of fisher is not abundant in the La Pine area. The best potential habitat occurs along the Little Deschutes River.

California Wolverine

The wolverine is listed by the state as threatened by ODFW. The wolverine has been characterized as being North America's rarest and least known large carnivore. Only limited information exist on their natural history and their current population status of wolverine in Oregon is unknown.

Typical habitat includes boreal forests, but they are known to occupy a variety of habitats including sagebrush scrublands. Wolverine researchers agree, in general, that "habitat is probably best defined in terms of adequate year-round food supplies in large, sparsely inhabited wilderness areas, rather than in terms of particular types of topography or plant associations" (Kelsall 1981).

Wolverine are scavengers that are largely dependent on large mammal carrion, and usually don't kill for their own food. They depend on other predators to provide their food sources. Wolverines can move long distances and occupy large home ranges.

Human presence is a deterrent to wolverine since they tend to occupy remote wilderness and other large tracts of undeveloped lands.

Populations of wolverine are thought to be rare throughout Oregon. Surveys have not been conducted on BLM-administered lands in the planning area. Observations of wolverines have been made on private lands just of the northern planning area.

The Cascades provide more typical habitat in Oregon, but the La Pine area may provide connective habitat that allows the opportunity for wolverine to travel between the more suitable habitats of the Cascades and the Newberry Crater area.

Other mammals

Populations of the pygmy rabbit (Bureau Assessment) have been declining throughout its range over the past several decades. Potential habitat occurs in the planning area, in which typical habitat for these rabbits is described as areas supporting dense and tall clumps of basin big sagebrush, and areas with deep soils in which the pygmy rabbit use to dig their burrows (Csuti *et. at*, 1997). Although habitat does occur in many parts of the planning area, only unconfirmed sightings have been made in the eastern portion of the northern planning area. Only localized surveys have been conducted for this species, therefore the extent of the population range and size is unknown.

The range of the Preble's shrew (Bureau Tracking) includes the entire planning area. Typical habitat is near permanent or intermittent streams in arid or semi-arid shrub and shrub/ grassland habitats (Csuti *et al.*, 1997). There have been no studies on diet of this shrew and little is known about its range, and use of habitats. No surveys have been conducted in the planning area; therefore, the extent of the population is unknown.

Mountain lion populations have been increasing in the area for several years and interactions with human have become more frequent as urban areas grow. Mountain lions occur throughout the area and follow the movements of deer and elk which provide their main source of food. Sightings of mountain lions regularly occur in the area of Horse Ridge, Badlands WSA, Cline Buttes, Grizzly Mountain, and urban areas surrounding Bend, Alfalfa, Prineville and La Pine.

Coyotes are abundant throughout the area and occur in every habitat type. Badgers, also common throughout the area, occur in much less density than coyotes but are still common in every habitat type. Badgers feed extensively on ground squirrels, and areas with high ground squirrel densities usually have a high density of badger digs.

Amphibians

Amphibians represent an important biotic component of riparian ecosystems. This group of animals includes frogs, toads and salamanders. They are important components of the riparian food chain. In some areas the largest proportion of total vertebrate biomass is made up of amphibians. Amphibians depend on water (usually for breeding), using almost all types of water sources with adjacent vegetation. Some frogs and toads spend their winter under insulating layers of leaves or woody debris, while others bury themselves in bottom of muddy lakes or ponds.

Amphibians are considered long-lived animals (life-spans up to 20 years), although most are eaten as prey within five years. Most amphibians don't breed until at least their second year of life, when they seek water sources that are warm and shallow with vegetation to support the success of egg development. Eggs are laid in clutches or singly, depending on the species, and usually on vegetation. Eggs hatch into aquatic larval stage and metamorphose into a terrestrial form (Leonard *et al.*, 1993).

Amphibians have limited mobility and dispersal capabilities, so continuous riparian zones are important pathways to colonize suitable, yet unoccupied habitats. Most amphibians require an aquatic habitat for part of their life cycle. The exceptions to this rule are the fully terrestrial salamanders of the Plethodontidae family.

Although Central Oregon has relatively few amphibian species, there are several important species found throughout the planning area. They tend to occur in areas with water in the form of wet meadows, ponds, intermittent streams, artificial canals, and the Deschutes, Little Deschutes, and Crooked Rivers.

The Oregon spotted frog is a federal candidate species officially designated by the USFWS. Historically, spotted frogs were found at elevations from around 600 to 5,000 feet, and ranged from British Columbia through the Puget trough of western Washington and south through western Oregon. It was also found in the Columbia River Gorge, the Klamath Basin in Oregon and California and the Deschutes River Basin (McCallister and Leonard 1997). The latter three population centers are now all that is known to remain east of the Cascade crest, and only one population is known to remain west of the Cascade Mountains. Recent surveys indicate a disappearance level of at least 70 percent across its former range (Hayes).

Spotted frogs are most often associated with wetland plant communities dominated by sedges, rushes, and grasses in or near permanent water (Leonard *et al.*, 1993), however, McCallister and Leonard (1997) reported that they are sometimes found in riparian forests. Spotted frogs prefer relatively warm water and are sometimes found in beaver created habitat. These productive emergent wetlands provide a diverse community of invertebrates on which spotted frogs feed. They consume plant tissue, bacteria, algae, detritus, and carrion (McCallister and Leonard 1997). Spotted frogs breed in very shallow water beside ponds or streams, in flooded meadows, or in water pooled on top of flattened, dead vegetation at the edge of a pond, usually in early to mid-spring depending on the temperature.

The Deschutes National Forest and Prineville BLM have recently mapped current and historic range of spotted frogs in Central Oregon. The La Pine block of the planning area is within historic and current range for spotted frogs. Much of the occupied habitat in the planning area occurs in the Little Deschutes River and Crescent Creek.

The Cascade frog (Bureau Tracking) is found in the planning area, but only in rare occurrences, such as in the Little Deschutes River and Squaw Creek. Cascade frogs are more common in the higher elevations of the Cascade lakes and meadows. The typical habitat is large wet meadows that remain damp during the summer months, where large numbers of Cascade frogs occur in the proper habitat. The planning area contains only a few areas with suitable habitat for Cascade frogs and is limited in the quantity necessary to support large populations.

Other amphibian species that can be found in the planning area include the spadefoot toad (in the desert areas east of Bend), the western toad (Bureau Tracking) found throughout the planning area, Pacific tree frog, and the long-toed salamander. The introduced bullfrog also occurs in the planning area, and is common in irrigation ponds, canals, stock ponds and warm water rivers. Western toad populations are declining throughout their range, but this species has not yet been listed as sensitive. Future management may need to consider western toads.

Major threats to the amphibians in the planning area include conversion of wetland vegetation, changing hydrologic conditions, poor water quality, pesticides, herbicides, fertilizers, and introduction of non-native species (i.e. bullfrog).

Reptiles

Reptiles are a group of animals better known as lizards, snakes and turtles. Lizards and snakes occur throughout the planning area but are limited to few species. Turtles are not found in the planning area and there are no documented observations on BLM-administered lands.

Many species of reptiles use riparian zones for foraging because of the high density of prey species, including insects, invertebrates, fish, amphibians, small mammals, and young birds. Snakes, such as the rubber boa, racer, ringneck snake, striped whipsnake, gopher snake, western garter snake, common garter snake, and western rattlesnake are common users of the moist habitats in the planning area. No surveys have been conducted for snakes in the planning area and only occasional sightings have been documented.

Common lizard species in the planning area include the northern sagebrush, western fence, short-horned, side-blotched, and the western skink. Less common but may occur in the planning area are the northern alligator lizard, southern alligator lizard, and the introduced plateau striped whiptail lizard (confined to the area around Cove Palisades State Park).

Typical habitat for the northern sagebrush lizard (Bureau Tracking) includes sagebrush dominated vegetation zones but also includes open forests of juniper, ponderosa pine, and lodgepole pine that have an open, brushy understory (Nussbaum *et al.*, 1983). These lizards are normally ground dwellers and use rocks and crevices to escape predators. They rarely climb vegetation more than a few inches off the ground. Sagebrush lizards eat beetles, flies, butterflies, caterpillars, ants, and a wide variety of other insects (Nussbaum *et al.*, 1983).

The sagebrush lizard is found throughout the planning area but is thought to occur in higher abundance on the eastern edge of the planning area where sagebrush is a more dominant vegetation type (Demmer, personal communication). No surveys have been conducted on the sagebrush lizard or its habitats in the planning area.

Fish

The Deschutes River, Crooked River, Little Deschutes River, Crescent Creek, Squaw Creek, Reynolds Pond, and Mayfield Pond are water bodies that support fish on or partially on BLM-administered lands. Listed below are the habitat conditions, fish (see Table 3-12) and population status, and management effects for those waters.

Crooked River (BLM-administered lands Below Bowman Dam to Lake Billy Chinook)

The Bowman Dam to Prineville section supports a mix of native redband trout, hatchery rainbow trout, and mountain whitefish. This section also supports small numbers of small-mouth and largemouth bass, brown bullhead, and very low densities of non-game fish. Both sections of the Crooked River support several species of indigenous non-game fish including long nose and speckled dace, sculpin, northern pike minnow, chiselmouth, and bridgelip and large scale sucker. Redband trout and mountain whitefish are present in very low densities in the upstream section and abundant in the downstream section.

Fisheries habitat conditions from Bowman Dam to Prineville are mixed due to several factors. The nutrients and cold water sustain a good tailrace fishery, but nitrogen super saturation, caused when water is spilled over the dam, a reversal of the flow regime from its natural condition, and high turbidity levels limit fisheries production.

Table 3-12: Fish Species by Water System

Crooked River (BLM administered lands Below Bowman Dam to Lake Billy Chinook)	
Redband Trout (State Sensitive)	<i>Oncorhynchus mykiss</i>
Rainbow Trout	<i>Oncorhynchus mykiss</i>
Mountain Whitefish	<i>Prosopium williamsoni</i>
Smallmouth Bass	<i>Micropterus dolomieu</i>
Largemouth Bass	<i>Micropterus salmoides</i>
Brown Bullhead	<i>Ameiurus nebulosus</i>
Longnose Dace	<i>Rhinichthys cataractae</i>
Speckled Dace	<i>Rhinichthys osculus</i>
Sculpin	<i>Cotus spp.</i>
Northern Pike Minnow	<i>Ptychocheilus oregonensis</i>
Chiselmouth	<i>Acrocheilus alutaceus</i>
Bridgelip Sucker	<i>Catostomus columbianus</i>
Large Scale Sucker	<i>Catostomus macrocheilus</i>

Deschutes River Aubrey Falls to Lake Billy Chinook	
Redband Trout (State Sensitive)	<i>Oncorhynchus mykiss</i>
Mountain Whitefish	<i>Prosopium williamsoni</i>
Chiselmouth	<i>Acrocheilus alutaceus</i>
Large Scale Sucker	<i>Catostomus macrocheilus</i>
Bull Trout (Threatened)	<i>Salvelinus confluentus</i>
Brown Trout	<i>Salmo trutta</i>
Tui Chub	<i>Gila bicolor</i>
Brown Bullhead	<i>Ameiurus nebulosus</i>
Three-spine Stickleback	<i>Gasterosteus aculeatus</i>
Smallmouth Bass	<i>Micropterus dolomieu</i>

Squaw Creek	
Redband Trout (State Sensitive)	<i>Oncorhynchus mykiss</i>
Mountain Whitefish	<i>Prosopium williamsoni</i>
Longnose Dace	<i>Rhinichthys cataractae</i>
Bridgelip Sucker	<i>Catostomus columbianus</i>
Large Scale Sucker	<i>Catostomus macrocheilus</i>
Sculpin	<i>Cotus spp.</i>
Brown Trout	<i>Salmo trutta</i>
Brook Trout	<i>Salvelinus fontinalis</i>
Kokanee	<i>Oncorhynchus nerka</i>
Bull Trout (Threatened)	<i>Salvelinus confluentus</i>

Little Deschutes River and Crescent Creek	
Redband Trout (State Sensitive)	<i>Oncorhynchus mykiss</i>
Brown Trout	<i>Salmo trutta</i>
Brook Trout	<i>Salvelinus fontinalis</i>
Mountain Whitefish	<i>Prosopium williamsoni</i>
Sculpin	<i>Cotus spp.</i>

Reynolds Pond	
Redear Sunfish	<i>Lepomis microlophus</i>
Largemouth Bass	<i>Micropterus salmoides</i>
Brown Bullhead	<i>Ameiurus nebulosus</i>
Three-spine Stickleback	<i>Gasterosteus aculeatus</i>
Mayfield Pond	
Largemouth Bass	<i>Micropterus salmoides</i>
Brown Bullhead	<i>Ameiurus nebulosus</i>

Fisheries habitat conditions upstream from the U.S. Highway 97 bridge to Prineville is a mixture of boulder strewn riffles and long glides with a low gradient (0.2 to 1.0 percent). At river mile 28 the North Unit Irrigation District withdraws the “natural flow” an average of 70 CFS for irrigation in the Culver-Madras area. A minimum of 10 CFS is left in the river. Water quality conditions for the section of the river were reported to be moderate to severe for fish and aquatic life (ODEQ 1988).

In the lower river section below U.S. Highway 97, the remote canyon and relatively undisturbed character have resulted in a near pristine cold water fisheries environment. At U.S. Highway 97 (river mile 18), springs begin to augment flows, contributing significantly to constant water flow, cooler water temperatures, and water quality.

Deschutes River Aubrey Falls to Lake Billy Chinook

Wild fish species currently present in this section of the Deschutes River are redband trout, mountain whitefish, chiselmouth and large scale suckers found upstream to Big Falls and Steelhead Falls, respectively, and bull trout (Steelhead Falls to Lake Billy Chinook). Introduced species include brown trout, tui chub, brown bullhead, three-spine stickleback and smallmouth bass (Lake Billy Chinook to Steelhead Falls).

Fisheries habitat conditions in this section of the Deschutes River consists of a narrow canyon with many gradient drops that are barriers to fish migration. The upper end of this section experiences much lower than natural flows due to irrigation withdrawal. The lower end is supplemented by Squaw Creek and spring water that significantly increases flow and decreases water temperature. Due to the gradient of the stream and stream flow, spawning habitat is limited for a major portion of this section.

Squaw Creek

Wild fish species currently present in Squaw Creek are redband trout, mountain whitefish, long-nose dace, bridgelip and large-scale sucker, sculpin, brown and brook trout (introduced), kokanee, and bull trout (lower end). There is potential for sockeye, summer steelhead, and spring Chinook if fish passage plans are successful at the Pelton/ Round Butte hydroelectric project.

BLM-administered lands along Squaw Creek are in 5 parcels which include 1.2 miles of the creek. Fisheries habitat on the BLM-administered lands above Alder Springs are generally fair to poor due to low water flows and high water temperatures. BLM-administered lands below Alder Springs are generally good to excellent due to the influence of the numerous springs that supplement the stream flow with cold water.

Little Deschutes River and Crescent Creek

Fish species in the Little Deschutes River and Crescent Creek are redband trout, brown and brook trout (introduced), mountain whitefish, and sculpin. Reasons for the current low numbers of redband and brown trout are unknown at this time, but may be attributed to the high infestations of nematodes found in these fish. On BLM-administered lands along these creeks, fisheries habitat conditions are in good to excellent condition with adequate in stream cover, healthy riparian areas, and moderate water temperatures to support cold water fish.

Reynolds Pond

Reynolds Pond is one of two ponds in eastern Oregon where redear sunfish have been introduced. Other fish species known or suspected to occur are largemouth bass, brown bullhead, and three spine stickleback. Lack of productivity in Reynolds Pond has created a population of stunted redear sunfish that out compete the largemouth bass. Habitat conditions are poor north of the pond's small islands due to shallow water and lack of cover. This concentrates fish in the southern portion of the pond near the dike making them vulnerable to fishing pressure. The pond was fertilized in the early to mid 1990s by ODFW to increase productivity. No studies to date have been done to determine the effectiveness of this measure.

Mayfield Pond

Mayfield Pond contains brown bullhead and largemouth bass. It appears that the population is large but the fish are small. Due to the shallowness of the pond, poor fisheries water quality, the potential is quite low to support most fish species.

Endangered Species

Currently there is only one fish on the Endangered Species list and that is bull trout, which is listed as threatened. The USFWS has proposed that some areas be designated Critical Habitat for this species, including the Crooked River from Prineville to Lake Billy Chinook and the Deschutes River below Steelhead Falls.

Proposed critical habitat includes areas that provide one or more of the following functions (USDI Fish and Wildlife Service 2002): (1) spawning, rearing, foraging, or over-wintering habitat to support existing bull trout local populations; (2) movement corridors necessary for maintaining migratory life history forms; and/or (3) suitable and historically occupied habitat that is essential for recovering existing local populations that have declined, or that is needed to reestablish local populations required for recovery. For each stream reach, the lateral extent of critical habitat is the width of the stream channel at its bankfull elevation; adjacent floodplains are not proposed critical habitat (USDI Fish and Wildlife Service 2002). However, human activities that occur outside the river channels can have demonstrable effects on physical and biological features of the aquatic environment.

In November 2002, the USFWS released its draft recovery plan containing recommendations for recovering bull trout in the Columbia River Basin. The goal of the draft recovery plan for the Deschutes Recovery Unit is to ensure the long-term persistence of self-sustaining complex interacting groups of bull trout distributed throughout the species native range. The following objectives have been identified in the draft Bull Trout Recovery Plan for the Deschutes Recovery Unit:

- Maintain current distribution of bull trout within the lower Deschutes Core Area and restore distribution in previously occupied areas within the Deschutes Recovery Unit

- Maintain stable or increasing population trends of bull trout
- Restore and maintain suitable habitat conditions for all bull trout life history stages and adaptive survival strategies
- Conserve genetic diversity and provide opportunity for genetic exchange

Water Quantity and Quality

Natural flows to the Deschutes and Crooked River are modified by the operation of five major reservoir systems: Crane Prairie (55,300 af) and Wickiup (200,000 af), both located in the Upper Deschutes River sub-basin; Crescent Lake (91,700 af) in the Little Deschutes sub basin; and Prineville Reservoir (153,000 af) and Ochoco Reservoir (46,500 af) in the Lower Crooked River sub-basin. The magnitude and frequency of flood events on the Crooked River below Bowman Dam has been reduced since the closure (meaning completion) of the dam in 1960. Prior to the completion of Bowman Dam in 1960, average peak discharges typically ranged from 3,000-7,000 CFS. Following completion, peaks have never exceed approximately 3,300 CFS, though the spring runoff in April of 1993 came close with discharge measured at 3,250 CFS (See Figure 3-1).

Peak flows that used to occur on average once every 5 years (i.e., 5,000cfs) have not occurred at all since completion of the dam, which has likely had a significant effect on flood plain and landscape level features. In addition, capture and storage of peak stream flows have effectively increased summer low flows from pre-dam conditions, as well as decreased bankfull flows from approximately 2,200 CFS to 1,200 CFS (see Figure 3-2; and Figure 3-3). Bankfull discharge is considered to be the channel-forming or effective discharge (Leopold, 1994). A decrease in bankfull flows has likely caused the Crooked River to decrease its channel capacity through changes in channel dimension and pattern.

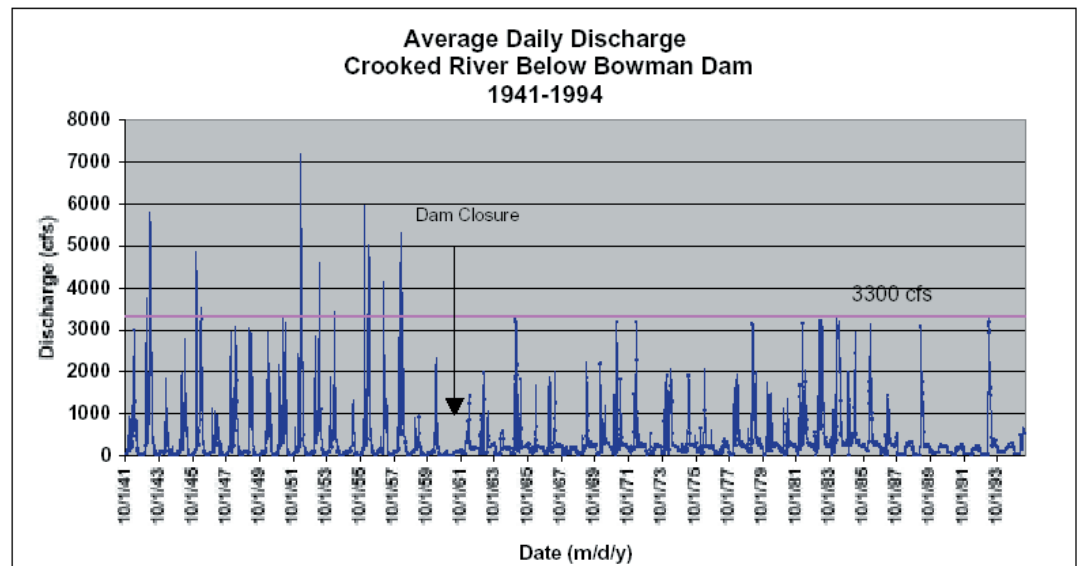


Figure 3-1. Average Daily Discharge, Crooked River below Bowman Dam.

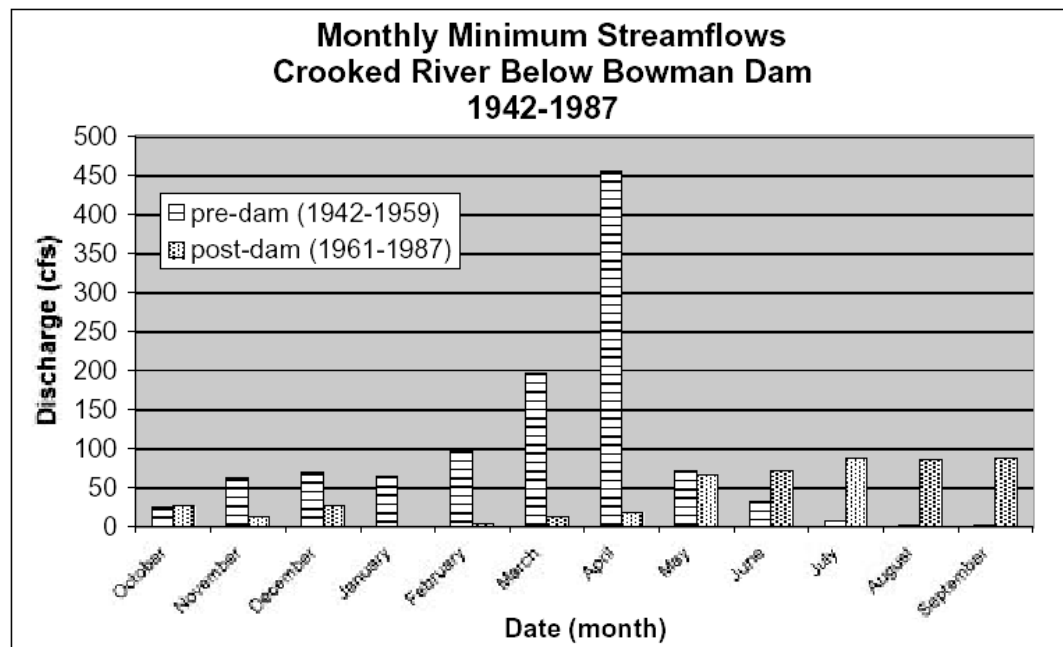


Figure 3-2. Monthly Minimum Stream Flows, Crooked River below Bowman Dam.

This discharge is sufficiently frequent and sufficiently effective to be most important in forming and maintaining the channel through the erosion and deposition process. Because the Upper Deschutes River is largely spring fed, it historically has a stable hydrologic regime in which fluctuations in water flows are minimal compared to rivers dominated by surface runoff (USDDA Forest Service, 1996b). However, stream flows on the Deschutes River have been altered since 1922 by Crane Prairie Reservoir and since 1942 by Wickiup Reservoir. In addition, six irrigation districts divert water near Bend to irrigate 115,000 acres in Jefferson, Crook, and Deschutes counties. Approximately 60 percent of the annual flow measured in the Deschutes River at Benham Falls is diverted for irrigation (Main, 2000). As a result of water storage and diversions for irrigation, the natural, stable flows of the Upper Deschutes River have been replaced by lower flows during winter storage months and higher flows during the summer irrigation season (USDA, Forest Service, 1996b). Just outside and to the north of the planning area, the Pelton-Round Butte Hydroelectric Project operates a series of three dams as “modified run of the river”. Thus, average daily inflow from the Middle Deschutes, Lower Crooked, and Metolius Rivers to the Pelton-Round Butte Project is approximately equal to the average daily discharge to the Lower Deschutes River.

The planning area includes several naturally occurring ponds and numerous constructed ponds. Most of the naturally occurring ponds are seasonally flooded dry lakebeds which are located primarily in the north. Other perennial ponds are fed by irrigation canal water or are excavated material sites that have intercepted the groundwater table. Stock water ponds constructed in intermittent stream channels or within dry lakebeds acquire water during spring runoff, but are generally seasonal, drying as summer progresses. Stock ponds created in meadows are fed by groundwater and may be seasonal or perennial depending on the location. Many ponds constructed for stock water receive water from irrigation canals.

Numerous wetland types occur within the planning area, but these areas are currently unmapped or classified electronically for most of the planning area. The USFWS has digitized various wetland types based on their national wetlands inventory (USDI Fish

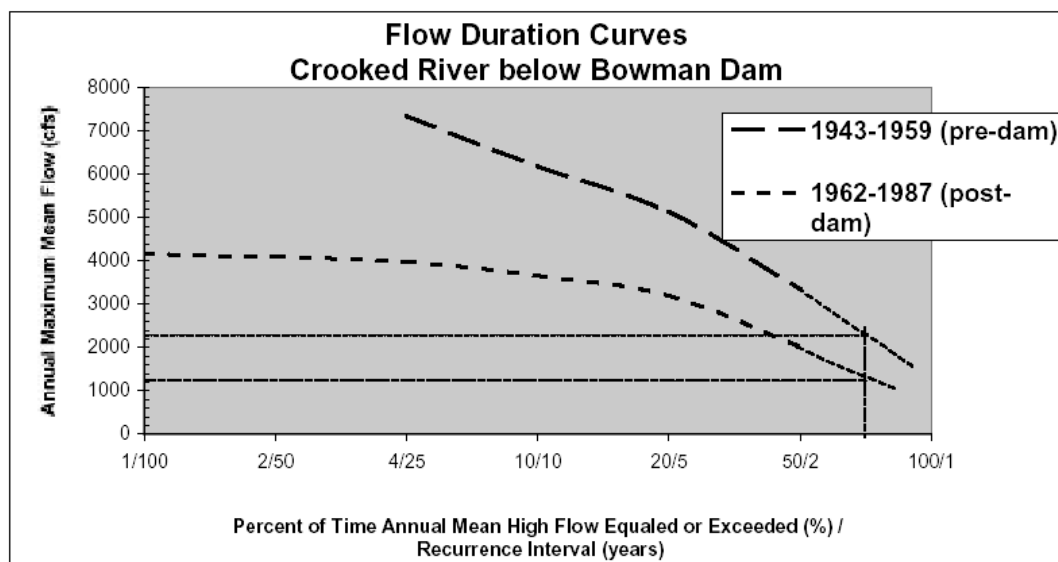


Figure 3-3. Flow Duration Curves, Crooked River below Bowman Dam.

and Wildlife Service, 2001). The digital data is available for approximately the western half (47 percent) of the northern planning area. Within the area for which there is data, there are 1,011 acres of wet meadows, no acres of forested wetland, and 500 acres of shrub wetland. Wetlands

are often found along streams, old stream channels, and low lying areas. Narrow strips of wetlands exist along both sides of the Deschutes River, Crooked River, Squaw Creek, McKenzie Canyon Creek, Little Deschutes River, and Crescent Creek. Wetlands created by irrigation water, such as Mayfield and Reynolds Ponds, are human-caused and are not considered federally designated wetlands. These ponds, however, still retain riparian values. Several acres of wetlands occur adjacent to some irrigation canals due to leakage. In the La Pine area, wetlands occur in several areas. Due to the shallow water table, wetlands are more common within the La Pine area than in the rest of the planning area.

Hydrologic Units/Aquatics/Riparian

Hydrologic units can be identified according to a system developed by the USGS. This system delineates a hierarchy of geographic regions and their subparts, such as region, sub region, basin, sub basin, watershed, and sub watershed. Each hydrologic division within the hierarchy is called a "field" (see Map S-14, Sub-basins, Watersheds, and Sub-Watersheds). Surface water within the planning area flows within the Middle Columbia sub region of the Pacific Northwest region. The entire planning area is situated within the Deschutes basin. The northern portion of the planning area is located primarily within the Lower Crooked and Upper Deschutes sub basins, while the La Pine area is located mainly within the Little Deschutes sub-basin. The Interior Columbia Basin Ecosystem Management Project (ICBEMP)(USDA Forest Service and USDI Bureau of Land Management, 2000) has identified six sub watersheds within the planning area as Aquatic A2 sub watersheds (see Map S-14, Sub-basins, Watersheds, and Sub-Watersheds). Four are within the Upper Deschutes sub-basin, and two within the Lower Crooked sub-basin. The A2 sub watersheds are intended to provide a system of core sub watersheds that are the anchor for recovery and viability of widely distributed native fishes. These sub watersheds, located on the Lower Crooked River, Middle Deschutes River, and the Deschutes River immediately downstream of the confluence of Crescent Creek and the Little Deschutes River, were selected due to their strong populations of native redband trout.

The Interior Columbia Basin Ecosystem Management Project identified the Upper Crooked Sub-basin as a high restoration priority sub basin. In addition, the Beaver/South Fork Crooked sub-basin, which lies outside of the planning area, was also identified as a high restoration priority sub-basin. These sub-basins were chosen as high priority for restoration because they have high risk to aquatic and terrestrial species and habitats from natural disturbance, have good opportunity to reduce those risks through restoration activities, and provide employment and economic opportunities in tribal communities.

In 1991, in response to growing concern over the integrity of ecological processes in many riparian and wetland areas, the BLM established national goals and objectives for managing riparian/wetland resources (Riparian-Wetland Initiative for the 1990s). The initiative's goals are to restore and maintain existing riparian/wetland areas so that 75 percent or more are in Proper Functioning Condition (PFC) by 1997, and to provide the widest variety of habitat diversity for wildlife, fish, and watershed protection. Subsequently, the BLM established a definition of PFC and a methodology for its assessment. The BLM has adopted PFC assessment as a standard for evaluating riparian areas and uses this to supplement existing stream channel and riparian evaluations and assessments. Perennial streams and wetlands located on Public land have been assessed for condition using the PFC methodology. The PFC assessment employs a consistent approach for considering hydrology, vegetation, and erosion/deposition (soils) attributes and processes (USDI Bureau of Land Management, 1998). The assessment of the on-the-ground condition refers to how well the physical processes are functioning.

PFC is defined separately for lotic and lentic waters, as follows.

Lotic waters: (running water habitat, such as rivers, streams, and springs; see BLM Technical Reference 1737-9 and -15) -

Riparian/wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to:

- Dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality;
- Filter sediment, capture bedload, and aid flood plain development;
- Improve floodwater retention and groundwater recharge; develop root masses that stabilize stream banks against cutting action;
- Develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration and temperature necessary for fish production, waterfowl breeding, and other uses; and
- Support greater biodiversity.

Lentic waters: (standing water habitat, such as lakes, ponds, seeps, bogs, and meadows; see BLM Technical Reference 1737-11 and -16) -

Lentic riparian/wetland areas are functioning properly when adequate vegetation, landform, or debris is present to:

- Dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality;
- Filter sediment and aid flood plain development;
- Improve flood water retention and groundwater recharge;
- Develop root masses that stabilize islands and shoreline features against cutting action;
- Restrict water percolation;
- Develop diverse ponding characteristics to provide the habitat and water depth, duration, and temperature necessary for fish production, water bird breeding, and other uses; and,
- Support greater biodiversity.

Riparian/wetland areas are classified as functional at-risk when they are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation. These areas are further distinguished based on whether or not they demonstrate an upward, static, or downward trend.

Riparian/wetland areas are classified as nonfunctional when they clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, etc., as listed above. The absence of a particular physical attribute, such as a flood plain, is an indicator of nonfunctioning condition. Riparian/wetland areas are classified as being in unknown condition when the BLM lacks sufficient information to make a determination.

Because the functioning condition of riparian/wetland areas is a result of the interaction between geology, soil, water, and vegetation, the process of assessing whether or not a riparian/wetland area is functioning properly requires an interdisciplinary team, including specialists in vegetation, soils, and hydrology. The team also requires a biologist because of the fish and wildlife values associated with riparian/wetland areas. Because of unique attributes of individual riparian areas, site-specific and on-site assessments are necessary.

Riparian/wetland areas will function properly long before they achieve an advanced ecological status. The range between PFC and an area's biological potential then becomes the "decision space" for social, economic, and other resource considerations. Until PFC is attained, management priorities and options focus on reaching this threshold. Areas that meet PFC will be managed to assure a continuation of this condition, and that progress is being made toward achieving the desired condition. Table 3-13 lists the functional rating for assessed streams, ponds, and wetlands in the planning area.

Table 3-13. Proper Functioning Condition Assessment Ratings

Stream/Pond/Wetland Name	Functional Rating
Stream Name	
Deschutes River	Proper Functioning Condition
Little Deschutes	Proper Functioning Condition
McKenzie Canyon	Proper Functioning Condition
Crescent Creek	Proper Functioning Condition
Pond Name	
Mayfield Pond	Proper Functioning Condition
Reynolds Pond	Proper Functioning Condition
Wetland Name	
Linear Wetland	Functional-At-Risk, Trend Not Apparent
Jackpine Loop	Proper Functioning Condition
Hard to Find	Functional-At-Risk, Trend Not Apparent
La Pine High School	Proper Functioning Condition
Patchy	Proper Functioning Condition
La Pine Airport	Proper Functioning Condition
Round Meadow	Proper Functioning Condition
Carex Wetland	Proper Functioning Condition
Poole Allotment	Proper Functioning Condition
Pipeline Meadow-East	Functional-At-Risk, Downward Trend
Howard Lane	Proper Functioning Condition
Morgart Allotment	Functional-At-Risk, Downward Trend
Boot Creek Headwaters Spring	Functional-At-Risk, Downward Trend

Dominant Hydrologic Processes and Water Quality

Many streams within the planning area are designated as water quality limited according to the Oregon Department of Environmental Quality. Section 303(d) of the Clean Water Act requires that each state develop a list of water bodies that do not meet water quality standards, (see Map S-14, Sub-basins, Watersheds and 303(d) Listed Streams, and Appendix E, 303(d) Listed Streams by Sub-basin) and delineate the stream segments and listed criteria for all streams within the vicinity of the planning area.

Within the planning area, most of the Deschutes River, Squaw Creek and the majority of the Crooked River are listed for stream temperature, most likely due to reduced stream flows from irrigation withdrawals or regulation from dams. Within the Upper Deschutes/Lower Crooked area, there are approximately 720 miles of canals and laterals that divert water from the Deschutes and Crooked Rivers to more than 160,000 acres of irrigated lands in the basin (USDI Geological Survey, 2001). Water quality data collected by the DEQ on the Deschutes River at Lower Bridge has documented relatively warm stream temperatures and high levels of biochemical oxygen demand and total phosphates (Cude, 1999). As a result, eutrophication is active from April until October, as evidenced by high pH and dissolved oxygen values. Eutrophication is the process of enrichment of water with nutrients, mainly nitrogen and phosphorous compounds, which results in excessive growth of algae and nuisance aquatic plants. It increases the amount of organic matter in the water and also increases pollution as this matter grows and the decays. However, over the ten year period from 1990-1999, the Lower Bridge site showed a significant improvement in water quality. On the average, the DEQ considers water quality at the Lower Bridge site to be fair in the summer and good in the fall, winter, and spring (Cude, 1999 Annual Report).

Figure 3-4 shows stream temperature data collected by the BLM at Steelhead Falls, located approximately 6 miles downstream from the Lower Bridge site. Data was collected in 1996 and shows the seven-day moving average of the daily maximum in relation to the state standard, which is 17.8°C (64°F). It appears that stream temperatures do not meet the state standard late in the season, when stream-flows are at their lowest and supplemental flows from reservoir releases for irrigation purposes are reduced.

Figure 3-5 depicts stream temperature of the Crooked River approximately four miles below Bowman Dam for the period 1997-1999. Due to the release of cool water from the

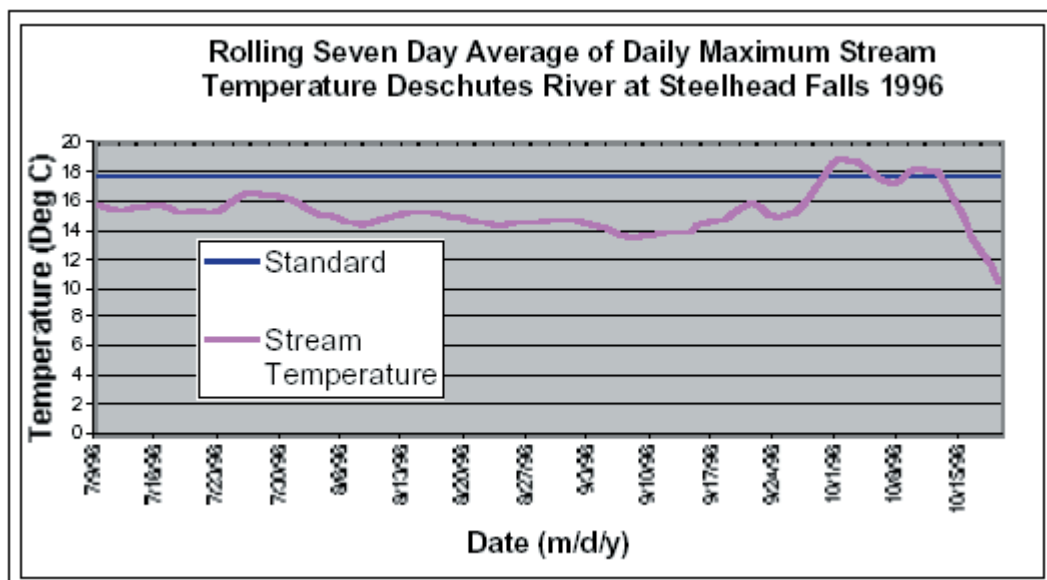


Figure 3-4. Rolling Seven Day Average of Daily Maximum Stream Temperatures, Deschutes River at Steelhead Falls.

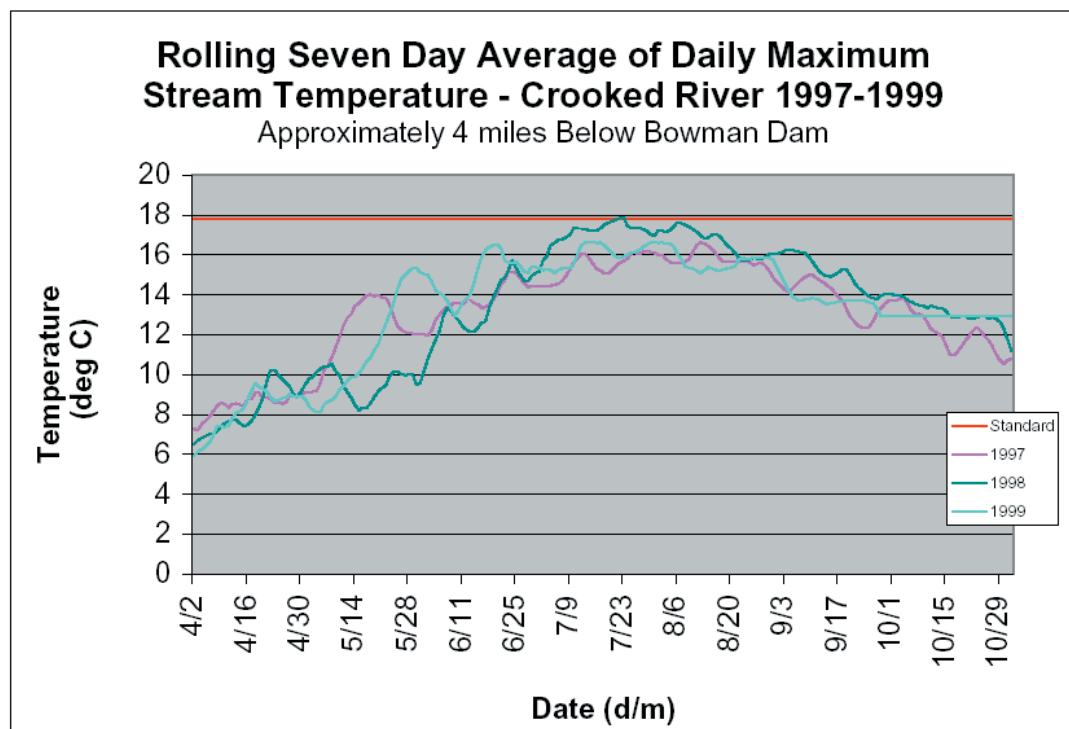


Figure 3-5. Rolling Seven Day Average of Daily Maximum Stream Temperatures, Crooked River.

bottom of Prineville Reservoir, stream temperatures for the three years depicted generally meet the state standard of 17.8°C (64°F). The exception is about a 1-3 day window in 1998 where the standard was exceeded. Downstream from the temperature station, stream temperatures quickly increase due to normal stream heating processes and altered stream channel and riparian vegetation conditions.

Within the Little Deschutes sub-basin, stream temperature is the only listed parameter for the Little Deschutes River, Crescent Creek, and Paulina Creek, with the exception that the Little Deschutes River is also listed for dissolved oxygen. Stream temperature is also a listed criterion for many other streams within the planning area.

Residents of Central Oregon depend on a large supply of groundwater and surface water for human consumption, fish and wildlife habitat, agriculture, industry, and commercial uses. Demands on water resources have increased in Oregon over the past few decades. Although most early water rights were established for irrigation and mining, today's demand includes municipal water supplies, commercial and industrial supplies, and maintenance of adequate stream-flows for fish, recreation, and water quality. Groundwater plays a key role in providing an adequate domestic water supply for the planning area. Virtually all drinking water within the planning area depends on groundwater. Public supply pumpage is concentrated primarily in urban and major resort areas, with scattered, smaller systems in rural areas. In addition, many residents are not connected to public water supplies and rely on private domestic wells (USDI Geological Survey, 2001). The only watersheds to provide surface water for drinking purposes are Bridge Creek within the Tumalo watershed, which provides drinking water to the city of Bend, and Pole and Upper Squaw Creeks in the Whychus watershed, which provides drinking water to Sisters. There are also thousands of groundwater protection zones currently being delineated for drinking water by the Oregon Health Department. One potable water well located on public land is at Chimney Rock campground. This well is monitored to ensure the State of Oregon's requirements for public water systems are met (OAR 333).

Although there are several developed springs and small reservoirs on BLM-administered lands, currently, there are only two reservoirs with appropriate water rights. All of these water sources were developed primarily for the purpose of domestic livestock watering, with wildlife considered as a secondary benefit.

The principal source of recharge to the groundwater aquifer is precipitation that occurs in the Cascade Range. Approximately 40 to 70 percent of the precipitation in the Cascades infiltrates to the groundwater system and moves toward discharge areas near the confluence of the Deschutes, Crooked, and Metolius Rivers near Lake Billy Chinook (USDI Geological Survey, 2001). Virtually all of the regional groundwater in the Upper Deschutes discharges to the surface in these streams in the vicinity of Lake Billy Chinook. East of the Cascade Range, within the planning area, there is little or no groundwater recharge from precipitation. However, the groundwater is artificially recharged by leaking irrigation canals. In 1994, approximately 46 percent of the total amount of water diverted for irrigation (1,060 ft³/s), leaked through the canal bottoms to become ground water (USDI Geological Survey, 2001).

Since surface water resources are fully appropriated within the Upper Deschutes region, groundwater must supply the water needs for all new development in the planning area (USDI Geological Survey, 1999). Because the groundwater system and streams are hydraulically connected, use of ground water can reduce stream-flow.

The La Pine area is characterized by shallow groundwater and rapidly draining soils. Thousands of lots one-half to one acre in size have on-site septic systems and domestic wells. Between 1982 and 1995, the DEQ has detected nitrate levels as high as 41 mg/l. The US Environmental Protection Agency (EPA) maximum contaminant level for nitrate in public water supplies is 10 mg/l. Consequently, the Deschutes County Environmental Health Division, the DEQ, and the USGS, working in cooperation, are addressing the issue of groundwater contamination from on-site septic systems in the La Pine region.

Soils

In general, there are five geographic areas within the planning area. The soils in these areas are described below and include 21 general mapping units documented in Upper Deschutes Soil Survey (USDA Natural Resources Conservation Service, 1992), Crook County Soil Survey, Prineville Soil Survey, and the Brothers Soil Survey.

The La Pine area has cold (cryic soils) very deep (> 60 inches) somewhat excessively drained, loamy coarse sands to a gravelly (pumice) loamy coarse sand formed in ash and pumice over buried alluvial gravelly sandy loam and loam soils.

The Millican area has cool (frigid soils) very deep and deep (> 40 inches) to moderately deep (20 - 40 inches) excessively well to well drained loamy coarse sands, sandy loams formed in ash and pumice over buried alluvial and lacustrine gravelly sandy loam and loam soils, or basalt bedrock in basins and lava plains. In the uplands a moderately deep and shallow (10 - 20 inches) stony sandy loam and loam over varied (skeletal) sub soils, but mainly sandy loams to clay loams over rhyolite and basalt bedrock occurs on the steeper hills, buttes, and mountains.

The Bend, Redmond, Sisters and Culver area has warmer (mesic soils) moderately deep to shallow, well drained loamy coarse sands (southern portion) and sandy loams (northern portion) soils formed in ash and pumice over recent lava (blisters) flows and gravelly loams to sandy loam (Sisters area) soils formed in ash and pumice over alluvial glacial outwash. The very steep canyons of the lower Deschutes and lower Crooked River are exposed rock outcrops with mostly shallow skeletal loams and sandy loams. There are a few isolated upland buttes that have similar soils as those described in the uplands in the Millican area (Cline Buttes, Smith Rock area).

The Powell Buttes area has cool (uplands and north slopes) and warmer (alluvial terraces, fans, lava plains and southern slopes) moderately deep to shallow, non-skeletal and stony or skeletal, well drained sandy loams and gravelly loams over basalt and rhyolite bedrock or duripans (hardpans). The uplands are similar to those described above.

The Prineville area has a mix of low alluvial terraces and floodplains and the uplands to the north, east and south. The low terraces and floodplains are mainly deep to moderately deep well drained, alluvial stratified (gravels) of sandy loams, loams, silty loams and clay loams that are mostly irrigated farmlands. The uplands to the north are the shallow to moderately deep and deep loam well drained and clay loam soils of the rolling foothills to Ochoco National Forest and Grizzly Mountain. The uplands to the south are a mix of deep to shallow well drained gravelly, sandy loams, loams and clay loam soils over clay, and skeletal clay loam and loam sub soils. These soils formed in colluvium and residuum from basalt, igneous and sedimentary bedrock with less ash deposition.

Continued development within the planning area may lead to activities that disturb soil surfaces by direct displacement, compaction, removal of protective vegetation and soil biological crusts resulting in increased susceptibility to wind and water erosion. Indiscriminate vehicle use off existing roads is the primary activity of concern.

Prime Farm Land

There are 33 detailed soil mapping units identified as Prime Farm Land in the Upper Deschutes Soil Survey and 27 (draft) detailed soil mapping units are identified as Prime Farm Land in the Crook County Soil Survey (draft) area. These units are usually identified with deeper alluvial soils of stream terraces, flood plains (if drained or protected from flooding) and/or irrigated lands with few restrictions to tillage practices and less than 8 percent slopes. In the urban interface areas almost all of this type of acreage are irrigated lands. In the Upper Deschutes Soil Survey about 10 percent or 168,000 acres of the lands would meet the definition of prime farmland if an adequate and dependable supply of irrigation water were available.

Biological Soil Crusts

Biological soil crusts consist of bacteria, microfungi, cyanobacteria (blue-green algae), green algae, bryophytes (short and tall mosses and liverworts) and lichens. The lichens have a symbiotic interrelationship between fungus and algae or cyanobacterium. The main components of these biological crusts are photosynthetic and most are capable of drying out and suspending respiration without negative consequences. They are also capable of almost immediately starting up again upon receiving moisture. They play important roles in soil ecosystem processes (Eldridge and Rosentreter, 1999) including soil stability and soil moisture (USDI Bureau of Land Management, 2001c). When mosses and lichens get buried they die (USDI Bureau of Land Management, 2001c). When biological soil crusts are disturbed, nutrient cycling especially nitrogen, can result in reductions in soil nitrogen or fixation in the range of 75 to 95 percent on sandy soils. This is a result in changes to species composition, burial, and reduced input and elevated losses (USDI Bureau of Land Management, 2001c). They also have direct multi-interactions with vascular plants in cool deserts (frost-heaving) like those in the planning area by "increased perennial vascular seed entrapment, germination, establishment, survival, biomass, and nutritional status" (Belnap and Harper, 1995).

Fire in pre-historic times was the largest agent of change in the sagebrush-steppe and juniper ecosystems outside of extended droughts in the planning area. Generally, the larger (less mosaic) and the more severe the fire the longer it took to re-colonize the area from the adjacent non-burn areas acting as propagules/seed/spore reservoirs. Intense fires today, natural or prescribed, can lead to the dominance of non-native species,

particularly if in the presence of non-native exotics such as cheatgrass. This increase in non-native species composition can lead to increased wildland fire frequency causing a corresponding decrease in species diversity of the soil organic crusts down to just a few species of mosses and cyanobacteria (Kaltenecker, 1997 and USDI Bureau of Land Management, 2001c).

In most of the western portion of the planning area the soils are sandy loams or loamy coarse sands, with both stony and non-stony surfaces. Some of the best and most complex biological crusts occur on the stony sandy loams and stony loam surface soils on the northern slopes (frost heaving) or in nearly all cases on the northern aspects of juniper, mountain big sagebrush and bunch grasses and amongst the blister rock outcrops. Usually the least common sites for biological crusts development are those deeper loamy sand or sandy loam areas in the lower depressional areas away from the stony or rocky blister areas. These are the mesic (warmer), deeper loamy coarse sands of the Gosney-Deskamp-Rock Outcrop or the Deschutes -Stukel Rock Outcrop mapping unit that are more susceptible to wind erosion. In the Millican area the soil unit most susceptible to wind erosion is the Stookmoor- Gardone-Borobey mapping unit and to a lesser degree Dester-Beden-Stookmoor mapping units. These are the frigid (cool) sandy loam soils at 4,000 feet or higher elevations with usually mountain big or low sagebrush / Idaho Fescue dominated rangeland communities. The stony clay and clay loam soils, more common in the uplands on the east side of the planning area or the areas north and southeast of Prineville Reservoir and north of Prineville itself, also tend to have increased biological soil crust diversity. This diversity is the result of both increased levels of precipitation at higher (4,000 to 6,000 feet) elevations and frigid (cooler) soil temperatures and where both mountain big sagebrush bunch grass and low sagebrush / Idaho fescue plant communities are dominant.

Fire/Fuels

The description Fire/Fuels adds the consideration of risk to human resources and to the sustainability of vegetative conditions into the analysis of vegetative condition. Consequently the following discussion focuses on two concerns 1) hazardous fuels in the wildland urban interface, and 2) fuels management in fire adapted ecosystems.

The wildland urban interface, that zone where the wildlands meet human communities, describes 21 percent of BLM-administered lands within the planning area. There are 13 communities described as a "community at risk" from wildland fire within the planning area, and several others beyond the boundary but directly adjacent. BLM holdings represent 39 percent of the lands within the Wildland Urban Interface (WUI) zone, with private holdings accounting for the remaining 61 percent of that area. The Brothers/La Pine FEIS/PRMP described categories for fire's role. The only change proposed to those existing categories described in Brothers/La Pine FEIS/PRMP is the inclusion of the mapped WUI, with those lands classified as Class 6, high value.

The role of fire in the wildlands beyond the WUI zone is described in terms of fire regimes and condition classes. On BLM-administered lands within the planning area, 74 percent of all acres have missed at least one expected fire cycle, primarily as a result of human influences such as fire suppression, grazing management, and road construction.

Hazardous Fuels in the Wildland Urban Interface

As part of the population growth in Central Oregon, new neighborhoods and individual homes are being built in lands previously considered wild.. This tremendous expansion of the wildland urban interface dramatically increases the problem of Communities at Risk from wildland fire, as well as adding a source of ignitions that can move onto the BLM-administered lands.

Several large fires in the past 20 years have threatened or destroyed homes in or near the planning area. Most notably, the Awbrey Hall Fire of 1990 and the Skeleton Fire of 1996 were both fast moving, destructive wildland fires.

A list of communities with the highest risk of negative wildland fire impacts was compiled for the entire United States at the time the National Fire Plan of 2000 was developed. The listing was not complete and several other communities have been added by local fire management officers to present a more thorough inventory of communities in the WUI. There are thirteen communities within the planning area on this list (Table 3-14).

In addition to these communities inside the planning area boundary, there are several Communities directly adjacent to the area, including Bend, Sisters, Cloverdale, and Sunriver.

Within the planning area, the WUI is described as 1.5 miles from the community boundary in forested ecosystems, and 0.5 miles from the boundary in rangeland and woodland ecosystems. While the amount of area that may actually be considered for hazardous fuels management will vary according to individual project and site-specific wildland fire potential, this zone is considered a starting point for analysis. Within the planning area, 21 percent of all BLM acres are within a WUI zone as described in Table 3-15. About 61 percent of the WUI zone is owned privately, and 39 percent of the entire WUI zone is managed by BLM.

Central Oregon, with its combination of hot, dry summer weather and routine lightning storms has frequent wildland fire ignitions. These lightning fires combined with native burning practices to regulate vegetative growth, biomass accumulation, and species

Table 3-14 Communities at Risk from Wildland Fire within the Planning Area

Community	County	Community	County
Cliffs Ranch	Klamath	Prineville	Crook
Crooked River Ranch	Jefferson	Pronghorn	Deschutes
Grizzly	Crook	Redmond	Deschutes
Jasper Point Resort	Crook	Sunforest	Klamath
La Pine	Deschutes	Terrebonne	Deschutes
Little River	Klamath	Tumalo	Deschutes
		West Powell Butte Estates	Crook

Table 3-15 Wildland Urban Interface Acres by Ownership and Vegetation Type

WUI Zone Width	Acres by Ownership			Total
	BLM	Other	Private	
Forest WUI Acres, 1.5 mile	44,701	119	31,185	76,005
Range WUI Acres, 0.5 mile	39,027	1,558	95,917	136,502
Total	83,727	1,678	127,102	212,507

composition, and were extremely important in maintaining well-functioning ecosystems. With the human inhabitants in the area today, those frequent ignitions have become a threat where they occur near the population centers.

In the past 20 years, there have been 747 fires involving BLM fire suppression within the planning area. Of those fires, 23 percent were of human origin, and 77 percent were lightning caused. Considering the two planning area blocks separately, there are some interesting differences. In the La Pine area, which has the most fuel and possibly the greatest potential for wildland fire involving homes in the wildland urban interface, there have been 62 fires within the planning area boundary in that 20 year period. Only 12 of these were lightning fires, the other 50 were human caused. The largest fire within the planning area in the past 20 years was the 120 acre Pine Forest Fire in the spring of 2001. Many large fires have burned near La Pine on private or National Forest lands, and there is a potential for large fire initiation and spread in this area. The larger northern portion of the planning area has had 685 fires in the past 20 years. Only 19 percent of those were human caused, the other 81 percent caused by lightning.

Fuels in Fire Adapted Ecosystems

Ecosystems within the planning area have adapted to periodic disturbance from fire. Over time, vegetative communities have evolved to survive fire. Sustainable ecosystems have adapted to the inherent frequency, size and severity of the natural disturbance cycle. In the planning area, 26 percent of the acres managed by BLM are functioning as expected in terms of vegetative structure and fuel loading and are considered to be in Fire Regime Condition Class (FRCC) 1 (see Key Concepts in Chapter 2). The other 74 percent (294,000 acres) of the BLM-administered lands within the planning area have missed one or two expected fire cycles due to suppression and other vegetation management choices in past decades (FRCC2) and some acres may have missed three or more expected cycles (FRCC 3). The vegetative response to this disturbance deficit is a change in species presence or prominence, and fuel quantity and continuity. The goal of fuels management in the planning area is to manage, where possible, to move fuel conditions from Condition Classes 2 and 3 toward a Condition Class 1, and to maintain areas currently in Condition Class 1.

Other disturbances, such as grazing, road building, timber harvest, and the introduction of weed species have also changed fuels conditions. Some of those changes may be short term, and others more permanent. Those changes have led to an altered fire environment. How much current conditions differ from conditions that would be found in an unmanaged ecosystem is not known.

Special Management Areas

Areas within the planning area have been designated Wilderness Study Area, Wild and Scenic River, Area of Critical Environmental Concern, or Research Natural Area. Several areas have more than one designation.

Wilderness Study Areas

Two Wilderness Study Areas (Badlands WSA and Steelhead Falls WSA) were evaluated in the Statewide Oregon Wilderness EIS (December, 1989), its the record of decision in titled "Wilderness Study Report" (October, 1991). Nearly the entire Badlands WSA was recommended as suitable for wilderness designation. Steelhead Falls WSA was not recommended suitable for wilderness designation. Horse Ridge ACEC/ RNA (see ACEC section, below) is also known as the Western Juniper Instant Study Area (ISA) which was evaluated for wilderness designation in Volume II of the Wilderness Study Report. This ISA was determined not to have wilderness characteristics and was not

recommended suitable for designation. Each of these areas are managed under BLM's Interim Guidelines for Lands Under Wilderness Review (BLM, 1995), better known as the Interim Management Policy (IMP), until Congress acts on Oregon BLM's wilderness recommendations. Only Congress can designate Wilderness or release areas from further wilderness review. The total acreage and amount recommended suitable and unsuitable for designation for each WSA or ISA is shown in Table 3-16, Wilderness Study Area acreage, and on DEIS Map 7, Special Management Areas.

Steelhead Falls WSA

Motor vehicle access is extremely limited in the Steelhead Falls WSA, due to steep topography of the Deschutes River Canyon and surrounding private lands that block most access. Folley Waters Road and BLM-administered lands adjacent to the WSA were closed to vehicle use through an EA in 1997. Several other locations adjacent to the WSA receive occasional unauthorized vehicle use, including off Canary Drive, River Place and Scout Camp Trail.

As the adjacent community of Crooked River Ranch grows, the use on trails within the WSA has increased. Numerous, braided, user created trails exist in the WSA. The trails are rarely maintained, which has resulted in erosion and some public safety issues.

Western Juniper ISA

The Western Juniper ISA is managed as the Horse Ridge ACEC/RNA under a management plan implemented in 1996 (see ACECs, below). Management of this area as an ACEC/RNA protects wilderness values since access is limited to foot traffic and any activities that would modify or impact the vegetation communities are prohibited. There is concern as mountain bike use increases in the general area and intrusions into the ISA by trail users have been noted. Field monitoring of this ISA occurs three to four times annually, for both ISA and ACEC purposes.

Badlands WSA/ACEC

Badlands ACEC includes 16,684 acres in the heart of the Badlands Wilderness Study Area (WSA), just east of Bend. The area was designated for its primitive recreation opportunities, geologic formations, a prehistoric canyon and pictographs and mature juniper woodland. The area was dual-designated within the WSA to provide long-term management of the WSA core in the event the WSA designation was lifted without wilderness designation.

Management direction for the ACEC is consistent with WSA management and prohibits firewood harvest, vehicle use off designated routes, new rights-of-way authorizations

Table 3-16 Wilderness Study Area (WSA) Acreage

Wilderness Study Area	Acreage Recommended Suitable	Acreage Not Recommended	Total Acreage
Badlands WSA	32,030	191	32,221
Steelhead Falls WSA	0	3,240	3,240
Western Juniper WSA	0	600	600
Total	32,030	4,031	36,061

and vegetation manipulation. Other uses and management must be consistent with the values for which the area was designated.

Present concerns mainly relate to vehicle use off designated routes and unauthorized motorized vehicle use during seasonal route closure periods (December 1 to April 30). Management actions have included signing, blocking of vehicle routes and increased law enforcement surveillance.

Wild and Scenic Rivers

Four National Wild and Scenic Rivers are located within the planning area. Management of BLM-administered lands within the Wild and Scenic River boundaries is guided by Wild and Scenic River Management Plans adopted during the mid-1990s. The Wild and Scenic Rivers that include BLM-administered lands are the Lower Crooked (Chimney Rock Segment) Wild and Scenic River, the Lower Crooked Wild and Scenic River, the Middle Deschutes Wild and Scenic River, and the Upper Deschutes Wild and Scenic River. The acreage of these Wild and Scenic River corridors is described in Table 3-17.

Upper Deschutes Wild and Scenic River

The Upper Deschutes River features primarily flat-water boating with limited whitewater and excellent trout fishing opportunities. The Upper Deschutes Wild and Scenic stretch is 54.4 miles, with 11 miles classified as “Scenic”, and 43.4 miles classified as “Recreation.”

Middle Deschutes Wild and Scenic River

The Middle Deschutes Wild and Scenic River is a 20 mile stretch of the river from Odin Falls downstream to the upper end of Lake Billy Chinook. This stretch of river goes through several isolated BLM parcels at the upstream (southern) end of the corridor, then through the Steamboat Rock parcel of BLM-administered lands west of Terrebonne, and through BLM and Crooked River National Grasslands BLM-administered lands along the western edge of the Crooked River Ranch community.

There are several access points along this stretch of river. However, most access is blocked by private development. The greatest concentration of access points to the river corridor occur from local roads within Crooked River Ranch, although the dense, convoluted road network at the Ranch makes it difficult for visitors to find these access points. None of these access points except for Steelhead Falls Campground are signed or developed. Recreational uses identified in the W&S River plan (BLM, December,

Table 3-17 Wild and Scenic River Acreage by Ownership

Wild and Scenic River	County	DNF	BLM	CRNG	BOR	State	Private
Lower Crooked WSR (Chimney Rock Segment)	Crook	0	2,300	0	220	0	40
Middle Deschutes and Lower Crooked WSR	Deschutes and Jefferson	0	3,645	2,535	0	210	2,915
Upper Deschutes WSR	Deschutes	11,462	79	0	0	1,474*	3,939

*Includes 1,144 acres of land leased by the BLM to the State of Oregon for the La Pine State Park
 SOURCE: Upper Deschutes Wild and Scenic River and State Scenic Waterway Comprehensive Plan (1996); Middle Deschutes/Lower Crooked River Wild and Scenic Rivers Management Plan (BLM, 1992); Lower Crooked River Chimney Rock Segment Management Plan and Environmental Assessment (BLM, 1992).

1992, BLM-OR-PT-93-11-1792) include fishing, hiking, backpacking, camping, wildlife and nature observation, expert kayaking and rafting, picnicking, swimming, hunting, and photography. Based on regional and national significance, recreation opportunities available within the river corridor were identified as being outstandingly remarkable.

Lower Crooked Wild and Scenic River

The Lower Crooked Wild and Scenic River corridor is located on the east side of Crooked River Ranch, and includes a 9.8 mile stretch of the river. The same outstandingly remarkable recreation opportunities are identified for this Wild and Scenic River stretch as the Middle Deschutes Wild and Scenic River. Access is almost impossible to this stretch of river, which is bordered mostly by private land and confined by steep canyon walls. Several hazardous trails do provide access to the river, and are generally used only by anglers. The one safe access trail (Hollywood Road) has been closed for several years after a private landowner installed a locked gate at the property line.

Lower Crooked (Chimney Rock Segment) Wild and Scenic River (ACEC)

The Lower Crooked (Chimney Rock Segment) Wild and Scenic River is an 8-mile river segment located between Bowman Dam (Prineville Reservoir) and the city of Prineville. Unlike the other two Wild and Scenic River segments in the planning area, the Chimney Rock Segment has a road alongside the river for the entire 8-mile stretch. Thus, this river segment has numerous access points, including 10 campgrounds and 2 day use sites. Outstandingly remarkable values identified for this river segment are similar to those identified for the Middle Deschutes and Lower Crooked Wild and Scenic Rivers, although the Chimney Rock segment also lists vehicle touring. The river corridor is popular for fly-fishing, sightseeing, camping, and to a lesser extent, kayaking. Recent improvements to Reservoir Road and planned paving of Millican/West Butte Road may lead to increased use of this river corridor for auto touring and bicycling.

Lower Crooked River ACEC encompasses all of the Chimney Rock Segment plus approximately 300 additional acres of upland. The B/LP FEIS/PRMP/ROD specified that restricting OHV use, not allowing firewood cutting, and encouraging prescribed fire would protect the area and by making sure any other authorized activities are compatible with the values of the ACEC.

A formal management plan for the Lower Crooked Wild and Scenic River (Chimney Rock Segment) was prepared in 1992. This plan encompasses the majority of the ACEC and has, in most respects, been implemented with protective measures equal to or, in most cases, more stringent than stipulated for the ACEC.

Most impacts associated with visitor use and recreation are being managed and facilities (including campsites and trails) have been developed. There is still concern related about the effect that an increasing western juniper density is having on the plant community within this ACEC.

Research Natural Areas

The Oregon Natural Heritage Act provides for a “discrete and limited system” of natural heritage conservation areas, which have “substantially retained their natural character” and which “represent the full range of Oregon’s natural heritage resources.” The Heritage Plan uses the concept of a natural ecosystem unit comprised of one or more elements, called an ecosystem “cell.” Each of Oregon’s ecoregions is a set of unique cells, which, when taken together, represent the full range of biodiversity in that ecoregion. The BLM cooperates with the Oregon Natural Heritage Program by identifying areas which will fill cell needs within the various ecoregions represented in the Prineville District, and by designating these cells, if appropriate, as research natural areas Two RNAs, Horse

Ridge (609 acres) and Powell Butte (510 acres) are located within the planning area. These two areas have also been designated ACECs and a description of each can be found below.

Areas of Critical Environmental Concern

Area of Critical Environmental Concern, or ACEC, is a special designation created by Congress in the 1976 Federal Land Policy and Management Act (FLPMA). Under FLPMA, the Secretary of the Interior and the BLM were directed to designate as ACECs: “. . . areas within the BLM-administered lands where special management attention is required . . . to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.” There are six ACECs within the planning area (6.5 percent of BLM-administered lands), all of which were designated upon publication of the Brothers/La Pine FEIS/PRMP/ROD in 1989. Table 3-18 lists these areas, their acreage, and the reasons for their designation. Existing ACECs are also shown on DEIS Map 7, Special Management Areas.

See above discussion of Badlands WSA/ ACEC

Horse Ridge ACEC/RNA

Horse Ridge ACEC has the additional designation of a Research Natural Area (RNA), which occurred in 1967. The National Park Service designated this 609 acre area as a National Natural Landmark (NNL) in 1968. Its 609 acres, on the predominately northeast slope of Horse Ridge, represent cell #3 for the High Lava Plains Province as published in the Oregon Natural Heritage Plan (NHAC, 1998): western juniper/big sagebrush/threadleaf sedge community.

A management plan for the ACEC was completed in 1996. Specific, ongoing management includes continuing plant inventory (native and exotic), exclusion of livestock grazing,

Table 3-18 Existing Areas of Critical Environmental Concern (ACEC) Within the Planning Area:

ACEC Name	Acres	Special Value
Badlands (part of WSA)	16,860	Primitive recreation, juniper woodlands, geology, and pictographs.
Horse Ridge (also RNA)	600	Cell #3 – western juniper/big sagebrush/threadleaf sedge community.
Lower Crooked River (Includes a segment)	2,953	Recreation, scenery, and fisheries.
Peck’s Milkvetch	3,902	Special status plant (Peck’s Milkvetch) and critical deer winter range.
Powell Butte (also RNA)	520	Three RNA terrestrial ecosystem cells: Cell #4 – western juniper/big sagebrush/bluebunch wheatgrass; Cell #5 western juniper/big sagebrush/Idaho fescue; and Cell #8 – western juniper/bluebunch wheatgrass.
Wagon Road	160	Remaining segments of historical Huntington Road.
Total BLM Acres	24,995	

¹High Lava Plains Province as published in the Oregon Natural Heritage Plan (NHAC, 1998)

and monitoring (fence maintenance, use in and adjacent to ACEC). User-created mountain bike trails attest to the increased public recreational use in this area. Increased use will increase the probability of the introduction of noxious weeds and other non-native species into the area.

Horse Ridge ACEC/RNA is also known as the Western Juniper Instant Study Area (ISA), as discussed in the Wilderness Study Area section, above. The restrictive management imposed by the management plan for this ACEC exceeds that required by the Interim Management Policy for Wilderness Study Areas.

Powell Butte ACEC/RNA

Powell Butte ACEC is also designated an RNA. Its 510 acres on the south slope of Powell Butte represents three RNA terrestrial ecosystem cells for the High Lava Plains Province as published in the Oregon Natural Heritage Plan (NHAC, 1998): #4, western juniper/big sagebrush/bluebunch wheatgrass; #5, western juniper/big sagebrush/ Idaho fescue; and #8, western juniper/bluebunch wheatgrass.

Management direction for this ACEC has been to essentially exclude all uses other than research and casual recreation. A management plan for this area needs to be prepared and long-term monitoring initiated. Livestock grazing is formally excluded from this area and steep terrain and long distance from water has limited livestock grazing to rare occurrences. A fence is needed to exclude livestock entirely. Subdivision and resort development of adjacent private land may increase the amount of unmanaged public use in the ACEC and increasing the probability of user created pedestrian, equestrian and motorized trails which could fragment the existing plant communities and serve as pathways for the establishment of invasive plants.

Wagon Road ACEC

The Wagon Road ACEC encompasses three small parcels of land totaling 75 acres. Each contains remaining segments of the historic Huntington Road, a major supply route linking The Klamath Agency with The Dalles. A public interpretive trail has been developed on the largest, southernmost segment, in cooperation with the Deschutes County Historical Society and the Oregon Trail Coordinating Council. Other uses of the area, including recreation and livestock grazing, are allowed provided the wagon traces and associated vegetation is not disturbed. The southernmost segment was fenced in an effort to protect the area from OHV use. Over the past several years, the significance and integrity of the two northern segments have been re-evaluated (Oetting 1997b:79; Ellis *et al.* 2002:46). As a result of that re-evaluation, those two segments no longer meet the relevance and importance criteria of an ACEC. In contrast to that, the historic Horner Road and Bend-Prineville Road are excellent examples of transportation networks developed during the early settlement period of central Oregon (Ellis *et al.* 2002). The historic linear segments were dedicated in the late 19th and early 20th centuries, exist in their original grade, and have over a hundred blazed trees and minor engineering features associated with them.

Lower Crooked River ACEC

See above discussion of Lower Crooked River (Chimney Rock Segment) Wild and Scenic River.

Peck's Milkvetch ACEC

Peck's Milkvetch ACEC encompasses 4,073 acres in an area southwest of Cline Buttes, in the Cline Buttes Issue Area. The area was designated for its value as critical deer winter range and as habitat for Peck's milkvetch (*Astragalus peckii*) a Bureau Sensitive species

also listed as Threatened by the State of Oregon. At the time, the ACEC encompassed the entire known range of this plant within the planning area.

Management direction for the ACEC, as provided for in the FEIS/PRMP, has been to restrict or bring into conformance all uses so they are compatible with Peck's milkvetch and critical deer winter range. Land tenure adjustments and firewood cutting are prohibited outright. Long-term monitoring of Peck's milkvetch has been established.

Increased recreation, including OHV, horseback riding, mountain biking and hiking, is occurring within the ACEC, some of which is not compatible with the management direction. A portion of the ACEC is within a livestock grazing allotment. Several small tracts of private land lie within (but not part of) the ACEC and many of them contain residences. In addition, significant populations of Peck's milkvetch have now been found outside the ACEC and the opportunity exists to enlarge the area.

Caves

Several caves on BLM-administered lands in the planning area receive regular visitation from the public. These caves are lava tube formations, some of which are located east of Bend, adjacent to the Arnold lava tube system in the Deschutes National Forest. Others are isolated lava tube formations or rockshelters scattered throughout the planning area. The public has nominated many of these caves for listing as Significant Caves, under the provisions of the Federal Cave Resources Protection Act (FCRPA) of 1988.

Of the caves nominated for listing, the two that receive the most visitation are Redmond Caves and Pictograph Cave, both located in Deschutes County. Both caves are expected to receive increased visitation as the population of Central Oregon grows. This increased visitation from a variety of recreationists has heightened concerns over cave resources. The development of sport climbing routes in Central Oregon caves beginning in the early 1990s also likely led to increased visitation. Since the early 1990s, a number of climbing routes in different locations have been developed in Pictograph Cave, protected by the placement of approximately 88 bolted anchors. Motor vehicle access to the Pictograph Cave entrances was closed by the BLM in 1990. Concerns over impacts to cultural resources and to bat populations led to a closure to all uses at Pictograph Cave in 1998. Early monitoring by volunteers, BLM, and Deschutes National Forest staff indicated that some violations of the closure were occurring. Monitoring efforts have decreased in recent years, although Pictograph Cave is still monitored by the Archaeological Society of Central Oregon (ASCO). This closure remains in effect until the FEIS/PRMP is implemented.

Redmond Cave, on a 40 acre BLM-administered parcel within the City of Redmond has also experienced increased visitation. Redmond Cave has suffered from many abuses over the past decade, including heavy amounts of graffiti, campfires inside the cave, excavation, human waste, abandoned automobiles, and litter. The cave is often visited by local residents who wish to explore the branched lava tube system however, the cave is also a popular place for parties and the area is often used by the homeless.

Since 1998, the City of Redmond has been working to lease the Redmond Cave site from the BLM under the auspices of the Recreation and Public Purposes Act (R&PP). The R&PP Act provides the opportunity to meet local needs through the lease or sale of BLM-administered land. The City of Redmond envisions the site as a public park. An environmental assessment (EA) for the R&PP Act lease and subsequent development of the site has not been completed. The cave site is also of possible interest as a future administrative site for a proposed combining of Deschutes and Ochoco National Forests.

Land Uses

Livestock grazing

Forage allocation

Livestock grazing is currently administered on 101 allotments in the planning area. About 80 permittees are authorized to graze livestock in these allotments under section 3 and section 15 of the Taylor Grazing Act. Total active preference in these allotments is 22,612 animal unit months (AUMs). Each allotment also has AUMs allocated to wildlife. Allotment boundaries are shown on Map 30, and acres and livestock AUMs for each allotment are shown in Appendix G.

In any given year, total annual authorized use fluctuates, and is generally less than total active preference. Each permittee will use none, all, or a portion of the AUMs available on his or her permit. Using the years 1990, 1995 and 2000, the average authorized use is about 81 percent of active preference, such that actual authorized use is about 18,342 AUMs when active preference is 22,612 AUMs. Reasons for allotments (or portions thereof) not being grazed in any given year vary, and include individual operation fluctuations, rest after wildland fire, prescribed fire, drought, and other factors.

An additional 22 allotments with 2,414 AUMs are available per Brothers/La Pine FEIS/PRMP direction, but are currently vacant (no permittees hold permits for them). The Brothers/ La Pine FEIS/PRMP also directed that 23,509 acres with 6,800 AUMs in scattered parcels in the La Pine area be added to existing allotments or used to create new allotments, but these areas would need new fences, gates, and water sources prior to livestock turnout (the installation of these developments was previously analyzed in the Brothers/La Pine FEIS/PRMP).

The Brothers/La Pine FEIS/PRMP also directed the temporary allocation of an additional 6,800 AUMs deemed available as a result of increased forage production after timber treatments in the La Pine area. These timber-related AUMs have not yet been allocated. and at this time the timber has begun to grow back, so not all of the forage is currently available. The number of AUMs should actually be 6,149, if one uses figures shown in Table 14 in the B/LP FEIS/PRMP, and closer to 4,750 if one takes into account changes in land ownership (there is less BLM-administered land in La Pine now than in 1989). The AUMs were to be allocated first to meet wildlife and riparian objectives, and then the remaining surplus to livestock.

Information specific to each allotment (vacant and otherwise) and scattered acres that are not allotted in La Pine is provided in Appendix G, including acres and livestock AUMs. The additional AUMs available as a result of timber treatments are not shown in the table in Appendix G, as they have not been allocated to a particular allotment or parcel.

Characteristics of livestock grazing allotments in the planning area differ from those in other parts of the Prineville District in several respects. There is a greater percentage of vacant allotments (where permittees have relinquished their permits), which is likely due to the unique pressures of managing livestock in an urban-rangeland interface. Allotments in the planning area are generally small scattered parcels (more than half of the allotments contain less than 1,000 acres of public land). Many are bordered on one or more sides by residentially or resort zoned lands, and recreation is a daily rather than a sporadically occurring activity in the allotments. Many miles of public/private boundary fall in "closed" range (see additional information below under "livestock districts"), further complicating the situation.

Trends

Authorized use has declined approximately 3 percent per year on BLM-administered land in the planning area over the last decade. Use on the Deschutes and Ochoco National Forests (including the CRNG) has declined about 2.6 percent per year since 1995 (personal communication, Byron Cheney and Don Sargent, USFS). The Draft EIS for the Interior Columbia Basin Ecosystem Management Plan estimated a 1 percent reduction per year for the Basin.

Evidence indicates that, as ranchers grow older, more leave the field than enter it. In some rural areas experiencing rapid population growth, base properties (home ranches where herds are kept for part of the year) are being converted to resort or residential developments.

In the recent past, the public was primarily concerned about the ecological effects of grazing. As grazing management and policy have adapted to address these concerns, the criticism has shifted to the economics of grazing livestock on BLM-administered lands. Urbanization in Central Oregon has created an increased need for alternative uses of public land (urban expansion, increased recreational activity), and the contribution public land grazing makes to the local economy may be minimal compared to the benefits derived from other uses of the land (Holechek 1991). In some areas, public land may not be able to accommodate all user groups. The BLM has received formal and informal requests from members of the public to end grazing on specific parcels of public land within the planning area, for reasons ranging from economics to ecology to recreation.

One of the BLM's objectives is, "to provide for the sustainability of the western livestock industry and the communities that are dependent upon healthy, productive public rangelands" (43 CFR 4180). This objective reflects a recognition that when ranchers remain in business, the private land "base properties" associated with public land grazing continue to provide open space and wildlife habitat. Public land grazing generates employment and economic activity, and is valued by some for its contribution to local culture, tradition, and sense of place.

Allotment Categorization

All grazing allotments in the planning area have been assigned to a management category (Appendix G). The three categories are improve (I), maintain (M), and custodial (C). There are seven criteria used to make the determination of allotment category (Appendix G). The categorization process is designed to establish allotment priorities so management efforts and funding can be directed to areas of greatest need. The I allotments are usually areas with a potential for resource improvement where the BLM controls enough land to implement changes. The M allotments are usually where satisfactory management exists and major resource conflicts have been resolved. Most C allotments are small unfenced tracts intermingled with larger acreages of non-BLM-administered lands, thus limiting BLM management opportunities.

Allotment Evaluation and Management

Allotment evaluations were completed by the early 1990s for most I and M category allotments in the planning area. During these evaluations, interdisciplinary teams reviewed monitoring information and examined and proposed changes to allotment goals, forage allocation, allotment category, and grazing systems. These goals, forage allocations, allotment categories and grazing systems are shown in Appendix G. The evaluations also proposed new rangeland developments to meet allotment goals. These developments are displayed in Table 13 of the Brothers/La Pine FEIS/PRMP, but they are not included in this plan because they are not planning level decisions, and they would require site-specific NEPA analysis prior to implementation.

In 1997, the Oregon/Washington BLM adopted the Standards for Rangeland Health and Guidelines for Grazing Management (BLM 1997), and incorporated the Standards into existing plans. The Standards meet the intent of 43 CFR 4180 (rangeland health regulations), which contain the objectives to "...promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions...and to provide for the sustainability of the western livestock industry and communities that are dependent upon healthy, productive public rangelands."

The Standards are the basis for assessing and monitoring rangeland conditions and trend. The assessments evaluate the standards and are conducted by an interdisciplinary team with participation from permittees and other interested parties.

Based on 43 CFR 4180, if livestock are a significant causal factor in failure to meet a Standard, as soon as practical but not later than the start of the next grazing season, management will be implemented to ensure that progress is being made toward attainment of the standard(s). (BLM, 1997)

The Prineville District BLM expects to complete rangeland health assessments on all District allotments by 2008, though this is dependent on adequate annual funding and national, state and local BLM priorities. Assessments have been completed on about 30 allotments in the planning area as of this printing. Livestock were identified as significant causal factors in the failure to meet one or more Standards on all or a portion of three of these allotments. This was or will be mitigated by a change in season of use, forage allocation level, or grazing intensity, or by discontinuance of livestock grazing in all or a portion of the allotment. Allotment Management Plans (AMPs) are sometimes developed for larger I or M category allotments. An AMP prescribes the manner and extent that livestock grazing is conducted to meet multiple use, sustained yield, economic, and other objectives. A grazing system is generally incorporated into the plan. An AMP is implemented when it is incorporated into the permit and accepted by the permittee, and is operational when supporting range improvements and the grazing system have been initiated.

Livestock Districts

Livestock districts are areas where it is unlawful to allow livestock to run at large (Oregon Revised Statutes 607 and 608). Livestock districts include incorporated cities, plus additional land as designated by the county (see livestock district boundaries on Map 30, Livestock grazing allotment boundaries). Areas outside livestock districts are managed under open range policy. In open range, private landowners are responsible for fencing unwanted livestock off their land, while in livestock districts (also called closed range) livestock owners must contain livestock on their own land. Grazing permittees with allotments in closed range are likely to have higher costs for fence maintenance, and greater liability risk regarding livestock/vehicle collisions. The BLM has no control over the State's livestock district laws, and is not involved in setting district boundaries. The BLM pursues civil and/or criminal penalties for owners whose livestock stray on public land, regardless of whether that land is in a livestock district or in open range (43 CFR 4140.1).

Minerals

The BLM administers three categories of minerals on BLM-administered lands. These categories include:

Locatable Minerals

Locatable minerals are minerals for which mining claims can be located, such as precious and base metals and some non-metallic minerals that are not classified “common variety.” Presently, there are 26 mining claims and 4 mill site claims within the planning area and two notices have been filed under the BLM Surface Management Regulations (43 CFR 3809).

The potential for the occurrence of locatable minerals within the central and western parts of the planning area is generally low because of the prevalence of young non-mineralized basalt flows, ash deposits, and other volcanic materials (Map S-20, Locatable Mineral Potential). The exception to this is a small area west of Terrebonne that has a high potential for diatomite. Diatomite was mined a few miles west of Terrebonne in the 1950s and continued until the reserves were depleted (Orr *et al.*, 1992).

The northeastern half of the planning area has a moderate potential for locatable minerals due to small pockets of mineralization in the John Day and Clarno formations. The southeast part of the planning area has a high potential because of known deposits of mercury in the Clarno Formation. Minor amounts of mercury have been produced with prospecting beginning in the late 1920s. By the late 1950s, the US Bureau of Mines had recorded 30 flasks of total mercury production from the Platner and Oronogo mines, though the actual output was probably larger (Brooks, 1963).

Mineral Materials

Common variety mineral materials such as sand, gravel, rock, and cinders may be purchased or acquired by free use permits from the BLM. Most of the planning area has a moderate potential for the occurrence of mineral materials (Map S-21, Mineral Material Potential). The high potential areas are in and around existing mineral material mines. Most of the high potential areas occur in areas with cinder cones, alluvial deposits of sand and gravel and volcanic rock outcrops known to have a sufficient quality for use in asphalt. The Badlands basalt flow also has a high potential for mineral materials in the form of ropy slab lava. However, the collection of slab lava in the Badlands ACEC/WSA would not be allowed in any alternative.

Population growth in central Oregon has led to an increasing need for mineral materials to build and maintain roads and highways. Between 2000 and 2095, the population of Deschutes County is expected to increase 96 percent from 117,688 to 213,220 people (Deschutes County 2003). The forecasted average annual demand for aggregate in Deschutes County is 1.15 million cubic yards between 2002 and 2010 with an increase to an average of 1.21 million cubic yards annually between 2011 and 2020 (DOGAMI, 1995). Mineral materials are a necessity for the construction and maintenance of roads, bridges and other infrastructure. An adequate and well-maintained transportation system and infrastructure is critical to the economy and quality of life.

According to studies by ODOT (1998), existing aggregate sources on BLM-administered lands are not sufficient for ODOT to consistently offer a public source to project bidders in the Bend/Sisters/Redmond area. When ODOT is not able to offer a public aggregate source, bidding is restricted to firms that have access to private sources, resulting in less competition and increased project costs. In an effort to secure additional aggregate sources on public land and increase bidder competition, ODOT conducted exploratory work on BLM-administered land and identified several sites for potential development.

In response to public input during the site identification process, ODOT deferred formal application for any new mineral material sites until completion of the FEIS/PRMP.

Although ODOT has expressed the most interest in developing mineral material sites on BLM-administered lands, road projects account for only 30 percent of the aggregate demand in Deschutes County (DOGAMI, 1995). Local governments and private construction firms may increasingly look to BLM-administered lands for aggregate sources during the life of this plan.

There are currently 20 mineral material sites on BLM-administered lands within the planning area. Over the past 10 years, nearly 1 million cubic yards of sand, gravel, and rock have been produced from quarries and pits in the planning area for construction and maintenance of county roads and state highways. During the same period of time, cinder production varied from 200 to 1,000 cubic yards per year, mostly for sanding roads during the winter months. Sales of sand, gravel and cinders to private individuals averaged 2,500 cubic yards per year during this time period. Theft of slab lava (a decorative stone) has been a problem in the Cline Buttes area for many years. Over the past 5-8 years, the demand for decorative stone has gone from a few tons per year to several hundred tons per year and is expected to increase further.

Mineral Leasing

Fluid mineral resources including oil, gas, and geothermal and some solid mineral resources such as coal and oil shale are obtained from the BLM-administered lands by leasing. The oil and gas potential in the central and western parts of the planning area is low whereas the eastern part (Clarno and John Day Formations) has a moderate potential due to the discovery of oil and gas where these formations crop out northeast of the planning area near the John Day River (Map S-18, Oil and Gas Potential).

Owing to the prevalence of volcanic and volcanoclastic sedimentary rocks in the planning area, coal, coal bed methane, oil shale and tar sands are considered to be absent from the planning area and are not addressed.

Most of the planning area has a moderate potential for geothermal resources because of the geologically recent volcanism, except in the area around Powell Buttes which has a high potential (Map S-19, Geothermal Potential). There is a geothermal anomaly in the vicinity of Powell Buttes (Brown, *et al.*, 1980). Their work indicates a potential for boiling-temperature fluids at a depth of about 1000 meters and more work is required to prove the existence of an economically viable geothermal system.

No areas within the planning area are leased and no exploration is occurring. This situation could change as technology improves or if energy prices rise notably.

Restrictions

BLM-administered lands are generally open to mineral exploration and development under 43 CFR 3000-3800. However, some lands are closed or withdrawn from some or all mining uses and are known as "exclusion" areas. Closures to surface occupancy for fluid mineral leasing and mineral material site development can be made at the planning level. Other closures, such as withdrawals from mineral entry under the 1972 mining laws or complete closures to mineral leasing are decisions made by Congress or the Secretary of the Interior.

Plan-level closures to the development of mineral material sites may apply in ACECs, RNAs, WSAs, and where this use is incompatible with management of other natural resources. ACECs, RNAs, and other sensitive areas may also have plan-level closures to surface occupancy for mineral leasing. Closures to mineral entry under the 1872

mining laws and mineral leasing occur in wilderness areas or areas withdrawn for other purposes. WSAs are also withdrawn from mineral leasing (43 CFR Subparts 3100.0-3 and 3201.11) but are open to locatable mineral entry with restrictions to prevent impairment of the suitability for inclusion into the Wilderness System (43 CFR Subparts 3802.1-5).

On lands open to mineral development and exploration, additional restrictions may apply to protect natural resources and mitigate conflicts with management objectives and other land uses. Such restrictions apply in “avoidance” areas including ACECs, WSAs, and RNAs not listed as closed to mineral operations. Restrictions may also apply to protect visual resources, significant archeological sites, wildlife, and habitat components. All applicable restrictions will be attached to mining notices, plans of operations, leases, permits, and contracts.

Some areas are closed to “surface occupancy” for fluid mineral leasing operations. Under this type of restriction, drilling to explore, test, or produce fluid mineral resources may not occur. However, mineral leasing may still occur, provided that the operator slant drills to the resource from an adjacent area where surface occupancy is allowed.

Oregon Military Department Use

The United States Army, including the Oregon Army National Guard, has trained on BLM-administered lands in Central Oregon since World War II. The existing Biak Training Center is centrally located for all National Guard Units within the State of Oregon and is the largest training site in Oregon as well as the only desert training site in Oregon. Consequently the Training Center is essential to meeting the training needs of the National Guard in Oregon.

The existing training area encompasses an estimated 29,744 acres of BLM-administered lands under permit from the BLM. This permit must be renewed every 3 years. Under this cooperative arrangement, the Oregon National Guard does not have exclusive use of the range except for a core area withdrawn from public use. Currently the limited duration of the permit limits the ability of the Oregon Military Department to obtain funding for infrastructure that would enhance the training capabilities of the facility.

The Biak Training Center serves as a maneuver-training center for Cavalry, Engineer, and Infantry units within the Oregon Army National Guard. Engineering units of the Navy and Marine Corps Reserve also train at the Biak Training Center and perform engineering and construction activities in support of the Army National Guard. Individual military units, either troops, companies, or detachments, generally range in size from 60 to 120 personnel. Most of these units use rubber tired off highway capable tactical vehicles like the HMMWV (Humvee). The Army National Guard’s combat engineer units use the tracked armored personnel carrier and there is only one troop of heavy cavalry, equipped with the Abrams tank and Bradley Fighting Vehicle that uses the Biak Training Center.

The mean number of training days for the five-year period (1997 through 2001) is 11,092 man-days per year (Figure 3-6). A man-day of training is defined as one soldier per day for training. The five year data for the Biak Training Center is skewed by a high value of 22,189 man-days of training in 1999. Current training plans for Training Year 2002 project that usage for this year will again exceed 20,000 man-days. While use of the Training Center is expected to remain cyclical, the average annual training usage for the Biak Training Center is expected to range around 12,000 man-days per year in the future.

Training activities at the Biak Training Center exhibits an annual pattern. Currently the pattern consists of individual task training requirements in the fall. During this period units may bivouac on the Training Center, but training is usually confined to developed ranges such as the 25m rifle range and little maneuver training occurs. December is

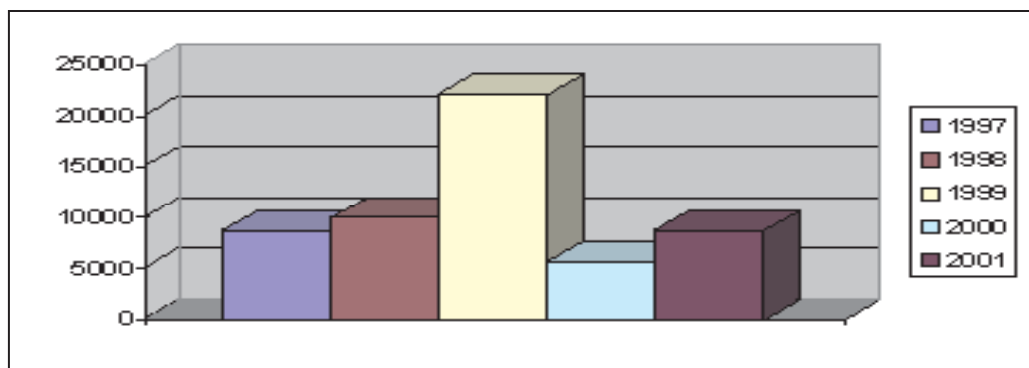


Figure 3-6. Military man-days of training per year on BIAK Training Center.

traditionally a time of home station training for military units and training rarely occurs at Biak during that month. Units usually start their crew or collective training in January and such use increases to three weekends per month towards May. In June, field-training activities at the Training Center usually decrease as units prepare for deployment for their summer two-week annual training exercise, usually in late June and July.

Depending on available funding levels, training requirements, and scheduling at other military training centers, the Biak Training Center may or may not be a location for significant two-week annual training exercises. Historically, Oregon National Guard units use major training areas that allow for live fire exercises for annual training and consequently most units train go out of state to training areas like Yakima Training Center, Washington, or Orchards Training Area, Idaho. Due to the lack of live fire training ranges and high wildland fire risk, the Biak Training Center does not normally host significant training activities in July and August. In September, training activity at the Training Center again rises to two or three weekends during the month as military units close out the training year and start preparations for the fall training cycle to begin again.

Training Restrictions

Under the Use Permit issued by the BLM use of live ammunition is not permitted and there are other restrictions on the use of ordnance. There are also restrictions on use of vehicles, excavation activity, and uses near private property.

Rehabilitation

The Oregon Military Department spent \$20,000 on road improvements and gravel during summer 2002, before the training in July. In the fall/winter of 2002, \$21,190 in native grass seed was spread and the Youth Challenge Program hand crew spent 5 days doing rehabilitation work in the training areas. More road maintenance and rehabilitation work is expected during spring 2003.

Forest Products

Timber

Timber production from BLM-administered lands in the planning area is relatively minor. Timber supply in Central Oregon is still primarily from National Forest lands, although sale offerings from National Forest lands have steadily declined since a peak was reached in the mid-1980s. Large industrial timber suppliers in Central Oregon include Crown

Pacific LLC, which owns large timber tracts south of La Pine and northwest of Bend; and U.S. Timberlands Services, which owns a large tract just west of the Ochoco National Forest.

Timber contributes to local and regional economies by providing jobs and generating revenue. Direct economic benefits are in the form of employment from logging and manufacturing of the raw resource. A variety of indirect benefits are generated from production of value-added products and the need for supporting goods and services. The BLM allocates 4 percent of Public Domain gross timber receipts to state governments which then re-allocates to county governments for use in building and maintaining roads and schools. Also, a state-administered forest products harvest tax is collected from all public and private timber harvest in the state of Oregon. The current rate is \$3.19/MBF. This tax helps fund state forestry programs such as firefighting, fire prevention, research, and administration of the Oregon Forest Practices Act.

On BLM-administered lands in the La Pine portion of the planning area, 40,134 acres of lodgepole and ponderosa pine are classified as commercial forestland (see Map 1, FEIS/PRMP Planning Area). This includes 1,826 acres of commercial forestland managed by the BLM within the La Pine State Park. Commercial forestland is defined as forestland that is producing, or has the capability of producing, at least 20 cubic feet of wood per acre per year of a commercial tree species. BLM commercial forestland in the La Pine portion of the planning area represents 2.4 percent and 1.1 percent of the total commercial forestland base in Deschutes County and Klamath County, respectively.

A timber inventory for the La Pine block, conducted in 1982, identified a sustained yield and allowable sale quantity (ASQ) of 3.3 MMBF/year. However, due to the extensive beetle-caused mortality, the 1989 Brothers/La Pine FEIS/PRMP called for an accelerated harvest program, harvesting up to 14 MMBF annually. This program had four primary objectives: 1) reduction of extreme fire hazard; 2) salvage of dead and dying timber; 3) successful reforestation; and 4) increase subsequent growth of commercial tree species. Since the inception of this treatment program, the La Pine area has become the focus of timber management for the District.

Between 1991 and 2001 timber harvested from BLM-administered lands in Deschutes and Klamath Counties ranged from a high of 27.4 MMBF in 1991 to no harvest in 1997 and 1999. In 1992 the harvest was 16.2 MMBF and in 2002 the harvest was only 0.2 MMBF. These numbers reflect the accelerated harvest of the early 1990s and sharp decline in the last few years as most of the available salvage was completed.

The silvicultural prescription applied was primarily seed tree cut with a minor amount of commercial thinning and shelterwood cuts. The treatment objectives have been achieved to varying degrees, although each of the original objectives remains as concerns in certain areas. Beyond the accelerated harvest program, current Brothers/La Pine FEIS/PRMP direction is to apply future timber management based on the “productive capacity of the land.”

Prior to the early 1980s, timber harvest in the La Pine area was light and infrequent. Harvest of the larger ponderosa and lodgepole pine occurred with individual tree selection as the primary harvest method. Harvest records for this time period are incomplete.

In the northern portion of the planning area, 1,080 acres are classified as commercial forestland. These are low-elevation, dry-site ponderosa pine stands, located just to the east of the Deschutes National Forest, in the Tumalo, Fremont Canyon and Squaw Creek areas. There are also small stands of commercial forestland located on Grizzly Mountain and east toward the Ochoco National Forest.

The amount of the Brothers portion ASQ for the northern area is approximately 87 MBF per year. Commercial forestland in the northern area represents a small fraction of one percent of the total commercial forestland base in Deschutes and Crook Counties.

The northern portion of the planning area has received limited commercial harvest during the last 50 years and no commercial harvest in the last 20 years. The harvest that did occur was generally a broad-area selection harvest of the larger diameter ponderosa pine with the objectives of salvage and harvest of mature trees. This practice fit the general silvicultural goal of public land forest management of that era: to remove mature and over-mature trees and to open up the stand to increase the growth of smaller understory trees. This prescription was applied to facilitate the eventual conversion of slower growing old -growth stands to younger, more productive stands.

Presently, juniper in Central Oregon is not being used consistently as a timber resource. Juniper's small size, poor form, defect, and handling difficulties are such that currently its use for conventional forest products is not economically feasible. However, juniper has attained a local niche market for a few specialty products such as paneling, flooring, and house logs. Testing and research continues in the areas of harvesting, milling, drying, and manufacturing for a variety of timber products. Refinements in processing juniper and other economic factors may lead to an increase in future demand for this resource.

Harvest and processing of timber and other wood products is still a major source of income in Central Oregon, but is declining in relative economic importance. Traditional timber sales on BLM-administered lands within the planning area are expected to be very minor for the next few decades until La Pine timber stands regenerate and grow to commercial size. However, noncommercial forest management for fuels reduction and ecosystem health are expected to increase. Treatments such as small tree thinning, pruning, brush cutting/mowing, and prescribed burning would be accomplished through contracted services or BLM personnel.

Biomass

Although there has not been a high local demand for biomass fuels, there is substantial future potential to generate this type of wood product in the planning area. Biomass, in this context, refers to woody residue produced (by grinding or chipping) from timber harvest (slash) or milling by-product (slabs, ends) or from material generated from other forest or woodland ecosystem or fuels reduction treatments (small trees). Biomass is usually used as a fuel for generating electricity or producing steam for direct heating, but can be used for other purposes too.

With the current emphasis on restoration and fuels reduction, the planning area could produce approximately 3-10 green tons per acre as a by-product of these treatments. The material would come primarily from small diameter thinnings in the lodgepole forest of the La Pine area or from juniper reduction in the woodlands of the northern area. This material could either be sold through a conventional timber sale or its value could be used to help off-set some of the contract cost of treatments.

The economic feasibility of harvesting this material is questionable in some areas. Also, biomass (as a fuel product) would compete with other potential products such as paper chips, firewood, post, and poles, etc. In wildland-urban interface areas, mechanical removal of small diameter woody material may be required in order to address fire hazard, smoke, and visual concerns. In most of the WUI areas, a partial subsidy would likely be necessary to remove this low-value material. Due to economic and environmental factors, an estimated 90 percent of the lodgepole pine type in the La Pine area could be made available and an estimated 30 percent of the juniper type in the northern planning area could be made available for biomass production. Treatment return intervals for lodgepole pine, especially in the WUI, would be approximately every

15-20 years. Return treatments in the juniper (to thin trees) would be much longer in the WUIs, perhaps once every 25-30 years. Outside the WUIs, the long-term treatment of preference in the juniper (or shrub-steppe) would be prescribed burning rather than mechanical, therefore, beyond the first entry, these areas would not contribute a substantial long-term source of biomass.

Firewood

Public firewood cutting continues to be a popular traditional use of public land in the planning area. For the period 1996-2000, the average annual harvest of firewood from the planning area was 1,062 cords.

The La Pine area, in particular, has received heavy use since the beginning of the beetle outbreak in the late 1970s. At that time, BLM began a personal-use firewood program in the La Pine Block to reduce the fire hazard and to help supply the local demand for firewood. Beetle-killed trees are still available for firewood, however, the amount of this resource is diminishing due to heavy use, decay, and resource concerns.

The juniper woodlands in the northern portion of the planning area also have been a traditional source of juniper firewood for the public for many years. The area west of the Powell Butte Highway and north of Alfalfa Market Road has been used heavily by the public, mostly Bend residents, since 1982. Beginning in 1995, the traditional use areas near Bend were closed and new areas were designated several miles to the east. Closing of the traditional areas was done for two reasons: increasing awareness of old-growth values and recreation/aesthetic considerations. Public use of new juniper woodcutting areas designated near Millican/West Butte Road and State Route 27 has been much reduced (less than 200 cords per year) due to smaller diameter trees and greater distance from Bend and Redmond.

Most of the firewood from public land is now sold through the Central Oregon Initiative Interagency Firewood Program. Firewood permits for the Deschutes and Ochoco National Forests and BLM Prineville District currently sell for \$10 per cord with a maximum purchase of eight cords per household. Commercial firewood permits are also sold by the BLM on a limited basis; usually to achieve resource objectives such as post timber sale fuels reduction, ROW corridor salvage, or thinning for forest or rangeland health.

Economic benefits of woodcutting are realized by local communities through sale of such items as chainsaws, gas, oil, and accessories. Commercial firewood sales provide some minor employment and a firewood commodity. A small percentage (4 percent) of BLM firewood sales goes to county budgets for roads and schools. The Prineville District BLM retains 20 percent of receipts for use in BLM road maintenance and resource management.

Despite the population growth, local public demand for firewood appears to be stable or declining slightly in recent years. This trend is due, in part, to an increase in use of highly efficient heating systems such as natural gas appliances and heat pumps. Old, inefficient wood stoves are also gradually being phased out and replaced by more efficient, certified stoves. The phase-out of old stoves was prompted by a 1988 Oregon law restricting wood stove sales to cleaner-burning certified units and a subsequent 1995 Bend city ordinance requiring removal of non-certified stoves upon sale of a home.

Special Forest and Range Products

Permits are issued for a variety of other vegetative products harvested from the forest, woodlands and rangelands within the planning area. Some of these products include: posts, poles, juniper boughs, juniper berries, hobby/furniture wood, lichen, tree and

shrub transplants, and pine cones. Of these, permits for juniper boughs are the most common. Most of the permits to harvest juniper boughs are sold to large commercial operators. The boughs are used to make Christmas wreaths, which are then sold at retail throughout the country. Annual harvest of juniper boughs fluctuates with the berry crop. In the period 1996-2000, an average of 170,112 pounds of juniper boughs were sold on the BLM Prineville District. Of this total, an estimated 75 percent came from within the planning area.

Demand for forest and range vegetative products is increasing in direct proportion to the local population increase. Permits for landscaping products (i.e. snags, tree and shrub transplants) are increasing as the use of xeric plants and natural materials becomes more popular. The economic benefits of vegetative material sales comes mostly from the commercial harvest of juniper boughs and a few other materials used to make medicinal products, furniture, and craft items, which are then sold at wholesale and retail outlets.

Visual Resources

Visual resources are the combination of land, water, vegetation, structures and other features that make up the scenery on BLM-administered lands. While the high peaks of the Cascades are the most dominant visual element in the planning area, BLM-administered lands do possess important visual elements, in large part because they provide an open space view from residences throughout the planning area. Key visual elements of the planning area include landforms that provide both a backdrop to views, and in some cases, home-site locations with panoramic views. These include Cline Buttes, Powell Buttes, Horse Ridge, the Smith Rock area, and West Buttes. River canyons such as the Crooked and Deschutes River, Squaw Creek, and several dry river canyons with dramatic cliff faces are also key visual elements that are sought out for recreational use as well as for home-sites. In addition to these larger elements, many other features are valued for their scenic quality. These elements include old growth juniper stands, clearings in juniper stands that allow for long-distance views, wildlife viewing opportunities throughout the area, ranch or agricultural lands, and historical features.

A portion of State Route 27, adjacent to the Crooked River, was designated as a BLM National Backcountry Byway in 1988. The other State Scenic Highways in the area consist of various routes in the cascades, including one loop west of Sisters and another southwest of Bend. Many other state and county roads in the area are identified as scenic tour routes by a variety of sources, including tourism boards, chambers of commerce, or recreational guides.

In rapidly growing Central Oregon, visual resource concerns are being voiced by many citizens concerned about highly visible developments, including buildings, cell phone towers, and golf driving ranges. In many of these cases, area residents' concerns are about the level of contrast of these new developments and the views they detract from or block. These same concerns have been expressed for a number of proposed projects on BLM-administered lands, and will likely continue to be concerns in the future.

Recreation

The BLM has traditionally managed recreation to provide a primitive and dispersed recreation experience, consistent with the large, wide-open landscapes that BLM manages. The planning area includes this traditional BLM recreation setting offered by BLM-administered lands situated further from the cities of Bend, Redmond, and Prineville. However, the planning area also includes BLM-administered lands located

within and adjacent to these rapidly growing cities. These “urban interface” lands are currently accessible from a variety of State Highways, County Roads, local roads, and directly from subdivisions and private property.

With the exception of the Lower Crooked WSR corridor, there are few developed recreation opportunities on BLM-administered lands in the planning area. Special Management Areas that attract specific recreation uses include: 1) Badlands WSA, 2) Steelhead Falls WSA, 3) Lower Crooked River WSR, 4) Middle Deschutes WSR, and 5) the Millican Valley OHV area.

Because of the wide variety of recreational opportunities that BLM-administered lands provide, these lands receive daily visitation, not only from local residents, but from other areas of the state, as well as out of state. For example, while nearly all visitors to the small, isolated BLM parcels west of Redmond are nearby residents, visitors from Eugene, Portland, and other areas of the Pacific Northwest may visit the Millican Valley OHV system or the Badlands WSA. Climbing opportunities on BLM-administered lands adjacent to Smith Rock State Park attract out-of-state and international visitors.

Community Recreation Demand

Most of the BLM-administered lands within the planning area are located in close proximity to the rapidly growing cities of Bend, Redmond, Sisters, and Prineville as well as the large unincorporated communities of La Pine and Crooked River Ranch. As cited in the 1994 - 1999 Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP), the lack of time and distance from recreational resources were frequently cited as barriers, especially among younger households with children. For local recreation participation, there is an inverse relationship between frequency of participation and distance to facilities. As distance to facilities increases, participation declines.

The location of BLM-administered lands in the urban core reflects a need to consider different types of recreational opportunities than those typically found on larger blocks of public land further removed from urban development. These lands may increasingly be used for local or community activities such as walking, running, picnicking, bicycling, and various sports and games, etc. Few of these activities are supported by BLM management or facility development in the urban interface area. Some of these activities, such as trail use, depend on the large blocks of public land in the urban interface. Other activities, such as historical interpretation, depend on the cultural and historic resources found on BLM-administered lands.

Developed Recreation

The planning area contains relatively few developed recreation sites on BLM-administered lands. Nearly all BLM sites are campgrounds along the Lower Crooked River and the Chimney Rock Segment WSR Corridor between Prineville and Prineville Reservoir. The remaining BLM recreation sites are staging areas at the Millican and Rosland OHV areas, primitive campgrounds, such as Steelhead Falls Campground on the Deschutes River, or picnic areas, such as Reynolds and Mayfield Ponds east of Bend.

Reynolds and Mayfield Ponds receive regular visitation from the public. Reynolds pond supports a better fishery, is in better condition and has more picnic tables than Mayfield Pond, and therefore receives more visits. Reynolds Pond is located on the perimeter of the Badlands WSA.

While Reynolds Pond was created to provide a recreation opportunity, Mayfield Pond is created as a result of irrigation canal overflow and has historically been used as a water source for cattle grazing. The pond has been fenced to eliminate mud-bogging by four-

wheel drive vehicles, however, the fence typically gets cut several times a year. Mud bogging and cattle grazing has limited the growth of riparian vegetation at the pond. Although Mayfield Pond is used for fishing and picnicking, other popular uses include target shooting, hunting, and dog training. Both ponds are popular sites for horseback riders, and both sites receive evening use, including late night parties.

These undeveloped sites do not have running water, paving or maintained roads. A few of these sites (Rosland OHV play area, ODOT Pit OHV play area and Steelhead Falls campground) have portable toilets. Many of these sites are difficult to access, some are located in residential areas, and few, if any, have directional signs or improved or designated parking areas.

No sites have been designed or maintained for group use, RV camping, picnicking, or day use activities on BLM-administered lands in the planning area. For the most part, camping and picnic areas or other developed recreation opportunities are provided by National Forest facilities, State Parks, or Bend Metro Park District areas. With the rapid population growth in Central Oregon, many communities are finding a shortage of developed parks for picnicking, trail use, and for sports. As Central Oregon continues to grow, the demand for recreation sites, for a variety of recreation opportunities, and access to outdoor recreation opportunities due to distance and poor public transportation will continue. Communities have expressed desires to use BLM-administered lands to develop park facilities. In addition, BLM has received requests for Special Recreation Permits to accommodate a wide variety of group uses, including outdoor concerts and large group camps. These permit requests are difficult to accommodate due to the lack of designated or developed sites.

Motorized Recreation Use

The generally flat terrain and open juniper forest vegetation throughout the planning area allows for relatively easy access for motor vehicles. The BLM-administered lands in the planning area have been historically used for a variety of motorized recreation, including OHV trail riding, four-wheel drive use, hunting, and sightseeing. This use has included a variety of organized group events, including motorcycle and four wheel drive vehicle races and hill-climbs.

With the exception of a few select parcels, such as the BLM-administered lands adjacent to Smith Rock State Park, or the isolated Airport Allotment parcel at the Dodds Road/Alfalfa Market Road intersection, and certain smaller urban interface parcels, all BLM-administered lands in the planning area are currently either designated as Limited (travel limited to existing or designated routes, or limited seasonally) or Open (cross-country motorized vehicle travel permitted). These lands include the Millican Valley area, lands east of U.S. Highway 97 between Bend and Redmond, the Cline Buttes area, and the Steamboat Rock area west of U.S. Highway 97 between Redmond and Crooked River Ranch.

OHV Use

Most OHV use occurs in the fall, winter, and early spring, when trail conditions favor riding. During the summertime, riding opportunities on most of the BLM-administered lands are restricted by the softness of trails and the dusty riding conditions. OHV use occurs from both local and out-of-area visitors. Many recreationists travel from communities on the west side of the Cascades to participate in OHV activities, partly because Central Oregon offers riding opportunities when areas in western Oregon and Washington are too muddy for OHV use.

There has been an increase in quad (Class I) use in Central Oregon (personal conversation, Dick Duford 202). This may be part of a larger demographic trend of more recreationists aging, and possibly reflects more family use.

Millican Valley is the only designated OHV system on BLM-administered lands within the planning area (although several designated play areas also exist). Many other non-designated areas are popular for OHV use, including the Cline Buttes area, the Steamboat Rock area, and lands immediately east of Redmond. In addition to BLM-administered lands, several other designated OHV areas exist in Central Oregon. These include the East Fort Rock Trail System (DNF), Henderson Flat Trail System (CRNG), and the smaller Edison Butte and Green Mountain Trail Systems. Each of these OHV areas is different, and the differences in season of use, vegetation, topography, and views offer recreationists a variety of riding options. Winter riding opportunities are somewhat limited. Areas, like East Fort Rock, are often closed due to snow depth, while others areas (e.g., North Millican and South Millican) are seasonally closed to minimize impacts to deer. This has led to increased use at areas such as Cline Buttes as OHV enthusiasts seek a place to ride relatively close to town.

The current designated and maintained OHV riding areas in Central Oregon are shown on DEIS Map 8, Travel Management Areas. The Christmas Valley area (located on BLM Lakeview District lands to the southeast of Bend) is the only place in Central Oregon that has dunes, and therefore is another attraction for both area and out-of-area recreationists. Generally, people who visit Christmas Valley don't visit other Central Oregon OHV opportunities during their trip (Personal conversation, Dick Duford 2002).

Play Areas

Seven material sites (pits) are listed as OHV play areas in OHV opportunity guides prepared by the BLM and USFS. These include four pits at East Fort Rock (two major pits and two smaller pits), one at Rosland in La Pine, and another in North Millican, and the ODOT pit. Pits are beneficial components of a larger trail system, because it provides an alternative to a trail system ride. During periods of extreme fire precaution these pits provide the only OHV opportunities on public lands.

The Millican Valley OHV area is located east of Bend and covers a north-south area extending roughly from U.S. Highway 20 north towards Prineville. The current boundary encloses 82,886 acres, of which 60 percent is located within Deschutes County and 40 percent is in Crook County, Oregon.

Three areas have been designated for OHV use: Millican Plateau; South Millican; and North Millican. Each area includes a designated road and trail system and different seasons of motorized use (See Table 3-19). In addition, the "ODOT Pit," owned by Deschutes County and the State of Oregon, is managed by BLM for OHV use. The ODOT pit is a large play area (10 acres) near the old town of Millican directly off of U.S. Highway 20, and provides a large percentage of the "pit" riding opportunities in the OHV area.

In FY 2000, OHV visitor use was approximately 15,000 user days. Road and trail riding at the Millican OHV area occurs year round but approximately 80 percent of the use is concentrated from November to May. In FY 2000, January through April was considered the main use period where approximately 60 percent of the total use for the year was during this period. During the months of May and June, OHV riding opportunities increase throughout the state and there are more attractive areas for the remainder of the year. This directs much of the OHV use away from Millican.

Approximately 75 percent of the riders come from the Portland, Salem and Eugene areas. The amount of use varies in each area and for each vehicle type. Only a small percentage

Table 3-19 Designated Road and Trail Systems Seasons of Use

Activities	Millican Plateau	Millican North	Millican South
Number of Acres	29,212	35,423	18,251
Season of Use	Year Round	May 1 to November 30	August 1 to November 30
Road Miles	48	27	29
Trail Miles	63	61	12

(less than 5 percent) of the use occurred in the Millican South Area. The low use in the south area is due to the limited season of use and during summer when desert-type riding is not as attractive as other areas (e.g., forested, or higher elevation areas). The greatest percentage of use comes from motorcycle (Class III vehicle types) in all areas.

Non-Motorized Dispersed Use

A wide variety of non-motorized dispersed recreation uses occur on BLM-administered lands in Central Oregon. These include mountain bicycling, horseback riding, hiking, running, rock climbing, fishing and hunting, target shooting, rock-hounding, wildlife viewing, visiting historic sites, and other educational activities. Although no user surveys have been done, much of this use is focused on specific areas, such as the Deschutes and Crooked River Canyons, several Dry River Canyons, the Badlands and Steelhead Falls WSAs, BLM-administered lands adjacent to Smith Rock State Park, and Horse Ridge. Several irrigation canals and ponds in the planning area receive regular visitation and use by recreationists.

Equestrian Use

Along with OHV use, equestrian use is one of the major dispersed recreational activities on BLM-administered lands in the planning area. Equestrian use is dispersed throughout the planning area. Often, adjacent residents ride directly from their houses or rural subdivisions onto BLM-administered lands.

Areas of concentrated equestrian use include the Cline Buttes area, particularly the Dry Canyon area south of State Highway 126 and west of Barr Road; the Badlands WSA, and BLM-administered lands adjacent to Crooked River Ranch, adjacent to Smith Rock State Park, around the community of La Pine, and west of Tumalo. BLM-administered lands are used to access longer trail ride opportunities on adjacent National Forest lands. Large, group rides are relatively commonplace on BLM-administered lands, although no designated or maintained trails exist on BLM-administered lands for equestrians, and no staging areas have been developed for their use. The lack of developed trailhead parking areas has led to the development of roads and disturbed areas at popular, informal use staging areas such as State Highway 126 at Deep Canyon (between Redmond and Sisters). In other locations, the lack of developed or maintained trails has created unsafe conditions for riders, or has resulted in erosion and resource impacts as existing trails degrade or new trails are created. Conflicts are occurring between equestrians and other trail users, including mountain bicyclists and OHV users. This has led to requests from equestrians to have trails or areas designated only for non-motorized, non-mechanized use.

Hiking/Running

Areas with the most significant scenery or topography provide for interesting hikes or runs. These areas include BLM-administered lands near Smith Rock State Park, the canyon complex at the western edge of the Cline Buttes area, the Dry Canyon located adjacent to U.S. Highway 20 east of Bend, the Badlands WSA, Horse Ridge, Smith Canyon (North Millican area), and the Steelhead Falls WSA. Hikers and runners also visit the Horse Ridge and Skeleton Fire area east of Bend and the North Unit and other canals on BLM-administered lands close to developed areas. Evening walks and hikes by adjacent residents are popular on BLM-administered lands.

Trail hiking opportunities on BLM-administered lands in the planning area are limited by the lack of identifiable, designated and signed trails. Only a few developed and maintained hiking trails exist on BLM-administered lands in the planning area, including short trails at Steelhead Falls WSA and at Chimney Rock on the Lower Crooked WSR. Many user created hiking trails lead from parking areas to the Deschutes or Crooked River within the planning area. However, these trails are not marked, and most are difficult or dangerous access routes to the rivers. The steep slopes and trail conditions surrounding Crooked River Ranch typically result in several accidents each year (personal conversation, Pat Reitz, Crooked River Rural Fire Protection District). In many cases, the access roads leading to these trailheads are rights-of-way roads that lead to residences on riverfront in holdings within larger BLM parcels. There have been conflicts at these locations as adjacent residences seek to limit access to visitors who park near their private property, arrive and leave late at night, light bonfires, party, and sometimes trespass on private property.

Mountain Biking

The opportunity to bike ride year-round makes Central Oregon an emerging mountain biking hotspot. Mountain biking is popular on adjacent National Forest lands, the CRNG, BLM-administered lands, and lands managed by the Bend Metro Park and Recreation District. However, there are no trails designated for this use in BLM's transportation system. The BLM has no trail maps or recreation information specifically related to mountain biking.

Although no use figures are available, the demand for mountain biking opportunities on BLM-administered lands is increasing. In the last five years, many guide books and maps have been published that show mountain bike routes on BLM-administered lands. Unauthorized trail construction by mountain bike enthusiasts has occurred over this period on east of Bend (particularly at Horse Ridge and Dry Canyon) and on lands adjacent to Smith Rock State Park. Over this period, the number of bike shops in Bend has also increased. The demand for mountain bike opportunities was projected in the Recreational Needs Bulletin, Oregon State Comprehensive Outdoor Recreation Plan (SCORP, 1991). SCORP data projected a 40 percent increase in demand for mountain bike opportunities in Central Oregon.

The use of BLM-administered lands by mountain bicyclists occurs primarily in the fall, winter, and early spring, as snow levels in the Deschutes National Forest close those trails to cyclists. During the summer, many of the trails on BLM-administered lands become too soft and dusty for mountain bike use.

The Horse Ridge area is considered the newest and best area for mountain bicycling on BLM-administered lands in Central Oregon. However, private lands in the Cline Buttes, Horse Ridge, and other areas make development of designated trail systems more complicated than many National Forest system lands in Central Oregon. As the private

lands at Cline Buttes, Horse Ridge and other areas are developed the ability to create longer trail loops for mountain bikes and other uses will decrease on BLM-administered lands.

While the maintained trails in the Millican Valley OHV system are open to mountain bike use, most riders prefer to use trails that are not shared by motor vehicles (personal conversation: Phil Hammerquist, Central Oregon Trails Alliance). Trails in the East Fort Rock OHV area (Deschutes National Forest) are also used by mountain bicyclists, and organized, competitive events have been held there. However, there is a concern among mountain bicyclists that many of the trails they have constructed will be found by motorized users, and the resulting motorized use will widen these single-track trails and ruin them for mountain bike use.

Rock Climbing

Rock climbing is an extremely popular activity at Smith Rock State Park and on adjacent BLM-administered lands. These lands include some of the routes in the Upper Gorge area, where the columnar basalt columns along the river provide climbing opportunities. In general, these routes are not as heavily used as the routes in the Lower Gorge area that are on the west side of the river and close to the parking area at Smith Rock State Park. BLM-administered lands also include the Marsupial Crag, rock spires located east of the road locally known as "Burma Road". Because this area is more difficult to access from the State Park center, it likely receives fewer visitors. At one time, these routes were more accessible, but the Burma Road was closed to motor vehicles in 1994, and this climbing area must now be reached by foot.

The level of use and lack of maintenance on user trails on BLM-administered lands adjacent to Smith Rock State park has resulted in vegetation disturbance and soil erosion in some areas. At Marsupial Crag, the access trails are located on steep and loose slopes, and have resulted in erosion, which is visible from a considerable distance.

Another climbing area of note within the planning area is the Sisters Bouldering Area, a 120-acre parcel of BLM-administered lands northeast of Sisters in Fremont Canyon. Although this area is designated as "Open" in the 1989 Brothers/La Pine FEIS/PRMP, some roads into the parcel have been blocked with logs that define a parking area near the main climbing boulders. The Fremont Canyon area has a combination of BLM, State, County and private land ownership. Land exchange proposals for blocking up federal lands have been considered in the past, as Deschutes County has sought to sell county holdings in the area. These efforts have been unsuccessful, and the sale and residential development of lands adjacent to this climbing area is likely.

Pictograph Cave was developed with sport climbing routes in the early 1990s. Many routes were developed in the cave, with a total of about 80 bolt placements (drilled holes with expansion bolts and small metal plates or hangers) to protect climbers. Climbing route development in Pictograph Cave occurred about the same time as route development in other caves managed by the Deschutes National Forest. The development of climbing routes in these caves has resulted in conflicts between climbers, cavers, and others interested in cave management and cultural resources. Specific cave management strategies on the Deschutes National Forest have been assessed in the Road 18 Cave Management Strategy EA. Pictograph Cave is currently closed to all uses, pending completion of the FEIS/PRMP.

Target Shooting

Target shooting is a longstanding and widespread activity on BLM-administered lands throughout the planning area. In addition to dispersed use on BLM-administered lands, target shooters also use National Forest lands and several shooting ranges. Shooting

ranges include the Redmond Rod and Gun Club and the Central Oregon Shooting Sports Association Range, which is located on BLM-administered lands along U.S. Highway 20 at Millican Valley.

Over the past decade, the increase in the number of subdivisions located adjacent to BLM-administered lands has increased the number of target shooters and the number of complaints about unsafe target shooting practices. Concerns have included safety, litter, poor choice of shooting areas, noise, juniper tree damage, and disturbance to wildlife. The population growth of Central Oregon has resulted in increased numbers of recreationists on BLM-administered lands, some of which object to the amount of gunfire in areas that they use for hiking, horseback riding, mountain bicycling, walking pets and other activities. While many target shooters are highly conscientious about leaving no trace, the intense use of an area for target shooting often leaves the area strewn with garbage and with juniper trees cut in half by repeated gunfire.

Areas where resource damage or social conflicts occur include: an area south of Prineville and east of the Millican/West Butte Road; an area along Lower Bridge Road south of Crooked River Ranch; the power-line corridor near the Redmond sewage treatment plant; areas near Alfalfa Market Road; a material site pit near the 61st/Young Avenue intersection in Redmond; and BLM-administered lands immediately east of Bend along U.S. Highway 20 (see Public Health and Safety for a related discussion)

Rockhounding

Central Oregon is widely known for its recreational rockhounding opportunities. Quartz, calcite, and chalcedony including jasper and various types of agate are abundant in locally mineralized zones of the John Day and Clarno Formations inside and adjacent to the planning area. These formations also hold an abundance of petrified wood in volcanic ash and debris flow deposits. Large quantities of gem-quality obsidian occur at Glass Buttes east of the planning area and this location is a popular destination for flint knappers. On Forest Service lands in the Ochoco Mountains adjacent to the eastern boundary of the planning area, deposits of thundereggs, agate, and other semi-precious gemstones can be found.

Within the Upper Deschutes planning area, the Brothers/La Pine FEIS/PRMP designated five rockhounding sites. Inventories of rockhounding sites during the summer of 2002 showed that the Prineville Reservoir and Reservoir Heights sites had very little material of rockhounding significance and that petrified wood was essentially depleted from the portion of the Fischer Canyon site that lies west of Hwy 27. Moreover, this part of the Fischer Canyon site has paleontologic resources that need to be evaluated for scientific importance. Therefore, the sites listed above would be removed from designation in Alternatives 2-7. The North Ochoco Reservoir, Eagle Rock, and the portion of the Fischer Canyon site east of Hwy 27 will continue to be managed for rockhounding uses. A new site, the Carey Agate Beds, would be designated as a rockhounding site in Alternatives 2-7 (See Map 1).

Rockhounding areas (public and private, designated and non-designated) are being actively promoted by individuals, groups, internet sites, rock shops, publications, and the media. Moreover, the Crook County Chamber of Commerce estimates that 80 percent of their information requests are related to rockhounding in Central Oregon (USDI BLM, 2001b). At some collecting sites, rock collectors have left numerous holes unfilled, undermined trees, excavated unsupported tunnels into the earth and have disturbed stream channels and riparian zones. Other impacts include OHV use, trespass, dense road networks, camping with no sanitation facilities and illegal removal and/or damaging of archaeological resources. Moreover, some collectors are taking large

amounts of rock materials for illegal commercial use. Large scale collection threatens to deplete some sites of material and could result in the loss of future recreational opportunities.

Water Based Recreation

In addition to Reynolds and Mayfield Ponds, irrigation canals that cross crossing BLM-administered lands can also provide a source of recreation opportunity. The Central Oregon and North Unit Irrigation Districts, together with the Bureau of Reclamation, operate and maintain several canals in the planning area. In the summertime, these canals have abundant water flows, and the North Unit canal in particular gets used by kayakers and surfers looking for a place to paddle close to Bend and Redmond.

Hunting

Upland game birds, big game, waterfowl, and unprotected mammals and birds are regularly hunted in the planning area. Mule deer, elk, and pronghorn hunting are quite popular with hunters. In addition, a variety of predators, including bobcats, cougars, and coyotes, are hunted. In particular, winter coyote hunting is popular in Central Oregon. There is no Bighorn Sheep season within the planning area. There is also no open season authorized for exotic sheep (e.g., Mouflon Sheep) on BLM-administered lands in the planning area, although private landowners can authorize hunts on private lands.

Special Recreation Permits

Special Recreation Permits (SRPs) are issued by the BLM for commercial recreation use of BLM-administered lands. Typically SRPs are issued on an annual basis for outfitter/guide activities such as hunting guides, commercial horse trail rides, rock climbing and hiking guide services, mountain biking guides, and for single-day events such as motorcycle races or endurance horse rides.

The BLM currently issues two annual use permits, both of which are for equestrian trail rides. One permit is held by Equine Management, which operates out of the Eagle Crest Resort, west of Redmond. The other is held by Rock Springs Guest Ranch, which operates from private land near Tumalo. In addition to these permits, several other fishing and hunting guide permits are issued in the planning area.

There has been a marked increase in the number of permits requested over the last several years, and in the number of commercial entities who are operating without a permit on BLM-administered lands. Permit requests have come from many groups, including mountain bike guide services, equestrian guide services, schools and recreation districts, and race organizers. The Deschutes National Forest currently has about 27 recreation Special Use Permits (SUPs) for outfitter/guide services (personal conversation, Mark Christianson, USFS). The BLM currently manages very few permits. Many new permit requests are for activities in the Steelhead Falls WSA and Badlands WSA. The issuance of these permits for commercial use within a WSA requires that the BLM conduct an environmental assessment (EA). The time and staffing requirements to prepare EAs has led the BLM to deny such permit requests.

Transportation and Utility Corridors

Transportation Systems

Within the planning area, especially around Redmond and La Pine, the boundary of urban development extends to adjacent BLM-administered lands. Therefore, growing communities rely on the adjacent BLM-administered lands for expansion needs. In the future, BLM-administered lands may be needed to provide for expanding infrastructure including new highways and by-pass roads around urban areas.

There are a variety of roads on BLM-administered lands, ranging from primitive roads or ways to arterials such as major highways. A primitive road or way is not maintained to guarantee regular and continuous use. Resource roads carry very low volumes and are normally spur roads that provide point access. Local roads serve a small area, receive low traffic volumes, and generally serve only a few uses. Many of these roads in the planning area were not constructed and are considered user created travel ways.

Generally, user-created roads do not provide connectivity to specific destinations. Collector roads normally provide access to large blocks of public land and connect with or are extensions of public road systems. Collector roads receive moderate traffic volumes and accommodate mixed types of traffic and uses. Arterials are State highways or major county roads designed to accommodate mixed types of traffic and serve many uses. They receive high volumes of traffic and safety, comfort and travel times are primary road management considerations.

BLM-administered lands are currently accessible from a wide variety of roads including, state highways, county roads, local roads, and public ways. The network of BLM collector roads provide widespread access to BLM-administered lands provides administrative access for authorized uses, various casual uses, and opportunities for dispersed recreation throughout the area.

Maintenance/Jurisdictions

There are no interstate highways in the project area. The ODOT has responsibility for the following highways in Central Oregon that cross BLM-administered lands:

- U. S. Highway 97, the main north/south route through the center of the state is designated as an expressway. An expressway is a multi-lane highway that is designed to provide for safe and efficient high speed and high volume traffic movements for both inter-urban and intra-urban travel. Expressways are a subset of Statewide Regional and District Highways. Segments of this highway are currently being considered for expansion or relocation, which may affect adjacent BLM-administered lands.
- U. S. Highway 20, the main east/west route through the center of the state, is designated as an expressway within the project area. It is currently being considered for widening between Bend and Sisters.
- State Route 126, the connector between Sisters, Redmond, and Prineville, is considered for expressway status. ODOT is planning to install passing lanes on segments between Redmond and Prineville. A two-mile segment of the highway located east of Redmond may have to be relocated through the adjacent BLM-administered lands to avoid the runway protection zone for the Redmond Airport.
- U. S. Highway 26, from Madras through Prineville, does not cross BLM-administered lands except for one parcel located near Ochoco Reservoir.

- State Route 27, from Prineville to Bowman Dam to U.S. Highway 20 near Millican, is the only remaining State Highway with segments of gravel surface. It may be considered for exchange of jurisdiction with Crook County for the Millican – West Butte Road.
- Powell Buttes Highway is a State Highway from State Route 126 to the Crook county line, and a Deschutes county road to U. S. Highway 20.

Recent legislation has provided for a transfer of the West Butte Road (BLM Road 6520), to the respective county jurisdictions. The road extends south from the “Four Corners” area to Highway 20, a distance of approximately 14.7 miles, with segments in both Crook and Deschutes County. Four Corners is the intersection of the subject road with the Prineville Reservoir road. The counties plan to improve the road to a paved highway standard and may eventually convey jurisdiction to the State.

There are approximately 151 miles of BLM roads in the planning area that are maintained for administrative purposes. Roads are maintained at various levels, depending on maintenance needs and funding. Maintenance levels reflect Transportation Management Objectives for planned management activities.

Maintenance levels and standards on individual roads vary from a minimum standard road such as a local or resource road that is not maintained on a regular basis, to a surfaced road. Road surfaces include native soil, cinders, crushed rock, pit run gravel, oil applied to crushed rock, and asphalt paving.

County jurisdictions have identified so-called “Historical roads” from research gathered from historical records. These roads provided a transportation network for early settlers and continue to be recognized by the county as public roads. Historical roads are not necessarily improved or maintained by the county. A formal vacating process is necessary if the county chooses to abandon the road. It is assumed that these roads were developed on un-appropriated public land before 1976, under the authority of Revised Statute (RS) 2477. By this law Congress provided, “The right-of-way for the construction of highways over BLM-administered lands, not reserved for public uses, is hereby granted.” These rights were to have been established in accordance with State law. It was not necessary at the time to obtain further review by the federal government. Records about historic roads are usually found in state or county records or other historical documents.

Transportation planning is accomplished as an inter-regional coordinated effort between federal, state, and local governments to support links between communities. Crook, Deschutes, Jefferson, and Klamath Counties have roads on public land throughout the planning area. County roads are public roads that are maintained by the county and accepted by the County Commissioners. A public way is dedicated by the county to the public but is not necessarily maintained by the county. County roads and certain county public ways have been authorized to extend through BLM-administered lands with a right-of-way grant under the provisions of FLPMA.

Commercial development in Redmond has extended along both sides of Highway 97 and a highway interchange has been constructed at Yew Avenue. Because of increasing traffic and development, this and other intersections along Hwy 97 near Redmond are expected to fail in the next few years.

The Yew Avenue interchange was constructed approximately ten years ago to address congestion problems at the intersection of US 97 and Yew Avenue. Since then, the Deschutes County Fairgrounds, a large retail center, two motels, a restaurant and a car wash have located near the interchange increasing demand and congestion in the interchange area. The congestion that occurs at the Yew Avenue interchange during a medium to large event held at the Deschutes County Fairgrounds is a concern. Another

concern is traffic congestion that may cause motor vehicle back up over the at-grade railroad crossing on Airport Way, just east of the Yew Avenue interchange.

ODOT in conjunction with the South Redmond Collaborative Planning Team is evaluating several proposals for highway improvements in the south Redmond area. In January 2003, ODOT completed the “Yew Avenue to Deschutes Market Road Analysis for the City of Redmond.” The preferred alternative includes the extension of 19th Street south to a proposed interchange at the US 97/Quarry Road intersection with an extension four miles south to the existing Hwy 97/Deschutes-Market road interchange.

Utility and Road Rights-of-Way

The BLM grants federal, state, and local governmental agencies, companies, cooperatives, and private individual’s rights-of-way to develop necessary transportation, utility systems through BLM-administered lands. A right-of-way grant is an instrument that authorizes the use of BLM-administered lands for specified purposes, such as roads, utility lines, communication sites and energy development sites (See Section 501, 43 USC 1761).

Regional Right-of-way Corridors

A right-of-way corridor is an existing alignment that has been identified as a preferred location to accommodate similar or compatible projects. Public land law directs BLM to minimize adverse environmental impacts by avoiding the proliferation of separate rights-of-way and using rights-of-way in common, to the extent practical [Section 503 (43 U.S.C. 1763)].

At the present time there are approximately 200 miles of regional corridors identified by the Western Utility Group that extend through BLM-administered lands in the planning area. Corridor routes identified by the Western Utility Group are designated in this land use plan and include routes for electric transmission lines and natural gas pipelines. Future development of these corridors would be subject to environmental review based on a specific proposal.

Rights-of-way for Communication Sites

There are three existing communication sites located in the planning area, shown in Table 3-17. Uses at these communication sites include government agencies that provide emergency services and two-way radio communications, commercial telecommunication providers, and multiple user facilities that are independently managed by a right-of-way holder. These sites are exclusively for low power use and high power broadcasting is strictly prohibited. There is adequate space available at these sites to accommodate additional users during the next 10 to 15 year period. There is currently space available within existing facilities, as well as land area for additional new construction, if necessary.

As the population of the region grows, it is anticipated that the demand for high elevation sites may increase slightly, however the demand for low elevation sites, especially cell phone towers, is expected to increase significantly. The demand for cell tower locations along transportation corridors will increase to provide improved coverage for cell phone users. Antennas for cellular telephones can co-locate on existing utility structures and are capable of sharing structures with multiple providers.

Rights-of-way for Energy Development

A right-of-way is used to authorize sites for wind and solar energy projects. The President's National Energy Policy requires that BLM increase and diversify the sources of both traditional and alternative energy resources, improve the energy transportation network and ensure sound environmental management. This integrated policy approach requires BLM to ensure that there is a sufficient means to both develop energy resources and transport energy supplies in an effective manner while still maintaining current environmental standards and good stewardship principles. It is BLM policy to consider the need for the production and distribution of energy and to encourage the development of renewable energy sources in acceptable areas (USDI-BLM, Washington Office Instruction Memorandum No. 2002-196).

BLM and the National Renewable Energy Laboratory (NREL) have established a partnership to conduct an assessment of renewable energy resources on BLM-administered lands. The objective was to identify planning units with the highest potential for development of renewable resources. A team of BLM and NREL representatives have established screening criteria to use in identifying suitable locations and have classified the wind and solar resource potential of lands in the eleven western states (USDI, Bureau of Land Management and U.S. Department of Energy. 2003).

According to NW Sustainable Energy for Economic Development (NWSEED), the resource potential for wind energy development in the planning area is rated as poor to marginal with the exception of the upper portions of Grizzly Mountain, Horse Ridge, Powell Buttes and West Butte, which are rated as fair. Regional utility corridors are located in the immediate vicinity of these topographic highs and could provide the necessary infrastructure to market the resource. At this time, there are no pending applications or wind energy developments on BLM-administered lands within the planning area.

Solar energy is used to produce electricity in two ways. Photovoltaic systems produce electricity directly from sunlight whereas solar thermal technologies collect heat energy from the sun on a large utility-scale to generate electricity. The National Renewable Energy Laboratory (NREL) created a solar assessment for the U.S. with a resolution of approximately 40 km x 40 km. According to this assessment, the Concentrating Solar Resource (CSR) in the planning area averages 5 kWh/m²/day, which is higher than the national average of 4 kWh/m²/day (Oregon Office of Energy, 2003). This is more than enough for operation of individual residential photovoltaic systems. No solar energy developments are present on BLM-administered lands within the planning area and no applications have been filed for any developments.

Table 3-20 Communication Sites

Site Name	Legal Description	Elevation	Designation
Grizzly Mountain	T. 13 S., R. 15 E., S. 17, SE $\frac{1}{4}$	High	Low Power – Broadcast
Cline Buttes A	T. 15 S., R. 12 E., S. 21, SW $\frac{1}{4}$ NE $\frac{1}{4}$	Low	Low Power
Cline Buttes B	T. 15 S., R. 12 E., S. 21, SE $\frac{1}{4}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$	Low	Government Only Air Navigation Site FAA Withdrawal

Summary

During the period the Brothers/La Pine FEIS/PRMP has determined the management of BLM-administered lands in the planning area, 1989 to the present, an average of about 25 new rights-of-way per year were granted. There are approximately 742 local utility and transportation right-of-way grants in the planning area that extend 780 miles through public land. These include rights-of-way corridors and communication sites that may contain more than one project. Most rights-of-way were granted to provide access or utility service through BLM-administered lands and include roads/driveways and electric/telephone service. There has been no interest expressed by industry for solar or wind energy development in the planning area.

Land Ownership

In the past, Central Oregon land patterns contained centralized urban areas where locally produced forest and agricultural products were collected, processed, and distributed. For example, trees were logged and shipped from the forests to the towns where they were processed into lumber. Ranches were large and for the most part self-contained. Many of the larger ranches have been broken-up. Modern transportation systems provide for fast transition from the agricultural lands to the urban lands and have blurred the rural/urban distinction. People often hobby farm or use their rural lands to supplement income from their city jobs.

Where once small towns were surrounded by agricultural lands, the perimeters of some towns and cities are surrounded by subdivisions and hobby farms with limited amounts of large scale agriculture taking place between the urban settings and BLM-administered lands (see Map 1).

Adjacent or in close proximity to most of the towns and service centers are subdivisions, collections of 2, 5, 10, and 20 acre lots with homes and mini-farms or ranches. The density of dwellings have increased adjacent or in close proximity to all the towns and service centers. One such subdivision is Crooked River Ranch in southern Jefferson County.

Large blocks, about 4,000 acres or larger, of BLM-administered lands are located within the planning area, which are often adjacent to larger blocks of BLM-administered lands also administered by BLM or USFS lands that are outside the planning area though still within the counties.

Crook County comprises about 1,914,240 acres, of which about half is BLM-administered lands. Deschutes County is about 1,955,200 acres, of which about 80 percent is federal land. The BLM manages 54 percent of the federal land in Crook County, and 31 percent of federal land in Deschutes County.

Larger blocks of BLM-administered lands, either BLM or Forest Service, are within a few miles of all the cities and communities, thus, readily available to the public. Smaller blocks of BLM-administered lands are often closer to these cities and often adjacent to the communities.

Smaller blocks of BLM-administered lands administered by BLM are scattered throughout the planning area; however, there are concentrations located near Grizzly Mountain north of Prineville, between Prineville and Prineville Reservoir, northwest of Redmond, and around La Pine/ Wickiup Junction. These concentrations of smaller blocks may be part of a larger block of BLM-administered lands, for example, all BLM-administered lands around Crooked River Ranch. Otherwise, the concentrations may

be isolated parcels amid private lands, for example, the parcels southeast of Prineville. These isolated parcels were often located in agricultural areas, as part of a larger open rangeland, but these pockets are becoming surrounded by subdivisions now, and, as a consequence, they are becoming isolated from availability to the general public.

Withdrawals

Some lands managed by the BLM have been withdrawn within the planning area. Withdrawals have occurred in order to transfer total or partial jurisdiction of federal land between Federal agencies, and to segregate (close) federal land to some or all of the public land laws or mineral laws, or to dedicate land for specific public purposes.

The planning area has existing withdrawals for: military training activities at a site 2 miles southeast of Redmond and at a site 8 miles east of Bend, for two exchanges, and for numerous public water reserves and power development purposes primarily along the Deschutes and Crooked Rivers. Under a withdrawal, the future uses of the lands would be determined by the entity for which the land was withdrawn. That entity (e.g. Army Corps of Engineers for the Oregon Military Department) has control over the land until they relinquish the use of the lands or BLM determines that the use of the lands requested in the withdrawal were no longer being used for the intent described in the withdrawal.

Leases and Permits

Temporary land use permits or leases may be used to authorize such activities as trespass prior to resolution, access, storage, apiary sites, National Guard or military reserve training, engineering feasibility studies, and other miscellaneous short-term activities.

Two to four permits are issued annually for photography and film, although the number of requests is typically greater.

Military training has occurred on 31,000 acres southeast of Redmond since the late 1930s (See Oregon Military Training Use under Land Uses). The BLM and the military are discussing the option of permitting training under a long-term lease. Temporary authorizations differ from withdrawals in that the permitted use is short term, the BLM retains administrative responsibility for the lands, and few or no permanent facilities are permitted.

The Recreation and Public Purposes Act

The Recreation and Public Purposes Act (R&PP) authorizes the sale or lease of BLM-administered lands for recreational or public purposes to State and local governments and to qualified nonprofit organizations. In the planning area, R&PP has been used for sewage treatment facilities in Bend, Redmond, and La Pine; golf courses, libraries, parks, and shooting ranges. In the future, it is anticipated that R&PP will be used for sewage treatment facility expansions, municipal parks, expansion of state parks, and public buildings such as fire stations or schools.

In 1995, Central Oregon Shooting Sports Association (COSSA) leased approximately 450 acres of public land for use as a public shooting range. The range is located immediately north of U.S. Highway 20 near the Millican town site. The site is managed as a shooting range by COSSA, with BLM oversight. While the site remains open to the public, and is extremely popular for organized group events, it generally does not draw casual, daily use from surrounding populations, such as Prineville, Redmond, Terrebonne, or Crooked River Ranch.

The Bend Aero Modelers Club was granted an R&PP lease in 1999 for a 5.75 acre site northwest of Dry Canyon and immediately north of U.S. Highway 20. This site is used for operation of gas powered model airplanes.

Public Health and Safety

Firearm Discharge

Over the past decade the increase in residential development adjacent to BLM-administered lands in Central Oregon has multiplied the number of people discharging firearms, the total number of people recreating, and the number of people living near BLM-administered land. It has also increased the number of complaints about firearm discharge. While both target shooting and hunting occur throughout the planning area, many site-specific conflict areas have been identified through complaints from adjacent landowners, and other BLM managed land users. In other cases, target shooting areas have become a problem due to the amount of debris left behind by target shooters, including shell casings, plywood, paper targets, bottles, metal debris, and miscellaneous trash. While many target shooters are highly conscientious about minimizing their impact on public land, the intense use of an area for target shooting often leaves the area strewn with garbage and with juniper trees cut in half by repeated gunfire. These conditions do not facilitate appropriate recreational opportunities.

Illegal Dumping

Illegal dumping in the planning areas has, and continues to be, a serious management issue. While abandoned vehicles are perhaps the most noticeable debris being dumped, the dumping includes residential, commercial, industrial and hazardous waste. Additionally, large quantities of animal remains can be found on Central Oregon's BLM-administered lands, left by pet owners, ranchers and area hunters. The foremost danger from this waste is the risk to human health, especially in relation to hazardous wastes. BLM has already conducted hazardous waste responses to paints, used fuel/oil, asbestos, batteries (lead), medical wastes (needles and sharps), wire burns and methamphetamine lab waste within the planning area. These have averaged about two per year, but are expected to increase in frequency with an increase in human populations. Other concerns include degradation of visual resources, and recreation opportunities. Indirectly, the existing waste is contributing toward the dumping of additional wastes because violators feel dumping is more acceptable in areas with existing waste. Discarded trash is commonly used as a target by target shooters, further breaking the existing waste up into smaller pieces, and lowering expectations of all BLM managed land users. The illegal dumping is more prevalent where there are numerous dirt access roads and it is relative easy to drive out of sight and dump debris. These sites are usually within a quarter to one-half mile off the pavement. Concentrated areas of public land dumping occur outside Redmond, Bend, La Pine, Prineville and Terrebonne/Crooked River Ranch. Particular problem areas include the following BLM-administered lands (See Map S-17, Illegal Dumping Areas):

1. South of Prineville along Millican/West Butte Road;
2. South of Prineville at Juniper Canyon;
3. South of Prineville off Remington Road;
4. South of O'Neil Highway and west of the North Unit Canal
5. East of Redmond and west of the North Unit Canal;
6. South of Redmond along Airport Avenue;
7. Northeast of Bend off Powell Butte Highway;
8. Immediately north and south of Alfalfa Market Road;
9. Barr Road in the southern portion of Cline Buttes

10. Lands at the State Highway 126/Barr Road/Buckhorn Road intersection;
11. Steamboat Rock area west of Terrebonne and South of Crooked River Ranch; and
12. Numerous locations in La Pine.

Campfires

Campfires are a concern because they increase the risk of wildland fire. The tremendous population growth in Central Oregon has magnified the risks of wildland fire, both to Communities at Risk, and to BLM-administered lands. Undesired effects of these fires include threats to human life, property, and natural and cultural resources. These threats are especially significant in urban interface areas synonymous with much of the planning area, where high densities of people and residences can be found (See Fire/Fuels discussion).

From a recreation opportunity perspective, campfires are not appropriate in specific areas within the planning area. Special areas, including RNAs, ACECs, and other highly visited, highly developed sites, are generally managed for research and interpretation. In addition, trailheads and staging areas are not appropriate for campfires because they are inherently congested areas where any additional activities have an increased likelihood of resulting in increased user conflicts.

BLM Law Enforcement Authority

Currently BLM law enforcement rangers can only enforce limited Oregon state and local laws. This limited authority reduces BLM law enforcement's effectiveness, hampering efforts to efficiently and effectively address violations on BLM-administered land. These limitations also require increased time and support from state, county, and city law enforcement officers, and diminish the level of public health and safety on BLM-administered lands.

Archaeology

Prehistoric/Historic Resources

Archaeological resources are fragile, non-renewable resources. Many natural processes and human activities have an adverse effect on the condition and integrity of archaeological resources. However, most processes, with the exception of wildland fire, flooding, or where initiated by human activities, generally result in slight to moderate damage. In these cases, most impacts can be mitigated before substantial damage occurs. In contrast, human activity can rapidly and irreversibly damage archaeological resources, contributing to the diminishment of the resource base (USDI Bureau of Land Management, 2000:6).

Cultural resource surveys have been conducted over approximately 22 percent of the total planning area. Those surveys have resulted in the documentation of hundreds of prehistoric and historic sites that represent a broad spectrum of past human activity within the area. Documented sites include, but are not limited to: lithic scatters; rock features; temporary prehistoric camp sites; rock art; remnants of homestead cabins; segments of historic trails; roads and canals; and landscape settings linked to ranch houses, corrals, barns and animal husbandry. Despite what is known about the number of documented sites, few of those recorded sites have been evaluated for their significance or their eligibility to the National Register. Evidence indicates that numerous other sites remain within the planning area remain to be discovered and recorded.

The integrity of these resources is currently threatened by a variety of causes. Some causes, such as natural weathering and erosion, gradually deteriorate archaeological resources. Others, such as natural or human caused fire or vandalism and theft, can destroy archaeological resources in a matter of minutes.

Human activities that can directly or indirectly affect the archaeological resource base include urban development, authorized commercial activities, recreational uses, military maneuvers, livestock grazing, and target shooting. Efforts to increase public awareness about the significance of archaeological resources and laws protecting them have failed to eliminate illegal artifact collecting and vandalism of these resources. Despite some convictions for violations, present law enforcement efforts aimed at stopping the vandalism at prehistoric/historic sites have not eliminated intentional removal or destruction of archaeological resources. It is expected that the incidence of illegal artifact collecting and vandalism will increase as the population in the area grows and increasing numbers of individuals make use of BLM-administered lands.

Despite the many ways human activities can diminish the archaeological base, sites also exist across the planning area that maintain good to excellent integrity (Hall, 1994: 118; Oetting, 1997a: 105; Oetting, 1997b: 80; Ellis, et. al., 2000). Some are associated with historic events, important persons, contain engineering features and/or could yield significant information to our understanding about past human lifeways (Ellis et. al, 2002:48). Research questions that information from such sites could answer include those related to settlement and subsistence, demography, technology, exchange and external relations, chronology, paleo-environments, or site formation processes (Houser, 1996:37-48).

Cultural Resources (National Register Sites /Historic Properties)

National Register Sites, or historic properties, are defined as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places, including artifacts, records, and material remains related to such a property or resource” [16 U. S. C. 470w(5)]. Eligibility for inclusion to the National Register is determined by criteria established by the National Historic Preservation Act of 1966 as amended. Historic properties that are included, or eligible for inclusion, in the National record are those that are considered unique, provide information important to the study of history or prehistory, and/or are associated with important events or persons that have made contributions to the broad patterns of our history.

Currently, none of the cultural resource sites identified and evaluated within the planning area are listed on or considered eligible for inclusion in the National Register. However, many of those sites have not been fully evaluated to determine their eligibility potential. Furthermore, evidence indicates that numerous other undocumented sites exist in areas that have not been surveyed yet. Therefore, evaluations of known sites, combined with additional surveys and/or site testing, are necessary to provide more complete information about the prehistoric and historic use of the area, as well as National Register site eligibility.

Traditional Cultural Property (Traditional Uses)

A Traditional Cultural Property (TCP) is a place that is eligible for inclusion to the National Register of Historic Places because of the significant role the property plays in a living community’s historically rooted beliefs, customs, and practices (Parker and King 1994:1). Currently, there are no traditional cultural properties that have been identified within the planning area. However, identification of those properties cannot be effectively accomplished without consulting with the groups and individuals who have

special knowledge about, and interests in, the history and culture of the area. In view of those considerations, the existence of traditional cultural properties within the planning area will remain unknown until the appropriate level of background research, fieldwork and tribal consultation has been completed.

Plants of Cultural Significance to Contemporary Indian People

Three federally recognized Indian tribes reside in Central Oregon; the Confederated Tribes of the Warm Springs Reservation of Oregon, the Klamath Tribes, and the Burns Paiute Tribe. The federal government, through treaties, congressional acts, court cases and executive orders has acknowledged its role and responsibility in consulting with Indian Tribes when federal actions may affect areas of traditional cultural significance (USDI Bureau of Land Management, 1995:27-29). In keeping with the spirit of that obligation, the BLM recognizes that local Indian Nations have recognized interests to harvest a broad range of plant species found on BLM-administered lands. A number of “cultural plant” species occur within the planning area. Cultural plants are defined as those plants which are used by Native Americans for subsistence, medicinal, utilitarian, economic or ceremonial purposes (Hunn *et al.*, 1990:526- 536). See Table 3-21: Cultural Plants, for a list of culturally used plants that occur in and around the planning Area.

Table 3-21 Cultural Plants Occurring In and Around the Upper Deschutes Planning Area

Scientific Name	Common Name	Habitat
<i>Allium species</i>	Wild onion	Dry hillsides
<i>Amelanchier alnifolia</i>	Serviceberry	Open woods; hillsides; riparian
<i>Apocynum cannabinum</i>	Dogbane (Indian Hemp)	Wet hillsides; riparian
<i>Archilea millefelium</i>	Yarrow	Sandy, lithic soils
<i>Artemesia tridentata</i>	Sagebrush	Numerous
<i>Balsamorhiza species</i>	Balsamroot	Dry hillsides
<i>Calochortus macrocarpus</i>	Sego Lily or Mariposa Lily	Sagelands, volcanic soils
<i>Camassia quamash</i>	Camas Meadows	moist areas; riparian
<i>Cereoarpus ledifolius</i>	Mountain Mahogany	Dry hillsides and ridge tops
<i>Cornus stolonifera</i>	Red Osier Dogwood	Riparian
<i>Elymus cinercus</i>	Great Basin Wild Rye	Damper soils in sagelands
<i>Fritillaria pudica</i>	Yellowbell	Lithic or sandy soils
<i>Juniperus occidentalis.</i>	Juniper	Hillsides, ridges, riparian
<i>Lewsisia redivia</i>	Bitterroot	Lithic soils
<i>Lomatium canbyi</i>	Canby’s Desert Parsley	Lithic soils
<i>Lomatium cous</i>	Biscuitroot	Lithic soils
<i>Lomatium macro.</i>	Gray-leaf Desert Parsley	Lithic soils
<i>Lomatium nuducauli</i>	Desert Celery	Lithic soils
<i>Perideridia species</i>	Yampah or Ipos	Meadows, grasslands, scabflats
<i>Prunus virginiana</i>	Chokecherry	Moist areas
<i>Rosa species</i>	Rosehips	Sunny openings, riparian, talus slopes
<i>Ribes species</i>	Golden Currant, Rock Currant	Riparian, moist areas on hillsides
<i>Salix species</i>	Willow	Riparian
<i>Sambucus canadensis</i>	Elderberry	Riparian

(Plants of cultural significance courtesy of The Burns Paiute Tribe and the Confederated Tribes of Warm Springs, Ordinance 68)

At-Risk Significant Archaeological Resources

At least six At-Risk significant archaeological resources have been identified within the planning area. These are Horner Road, Tumalo Canals, Redmond Caves, Bend-Prineville Road, Pictograph Cave, and Steelhead Falls. Three of those sites, Horner Road, Tumalo Canals, and the Bend-Prineville Road are considered eligible to the National Register for their association with events that have made significant contributions to the broad patterns of local history. Although the other three sites have not been evaluated for their significance, it is likely that they would yield important information about prehistoric lifeways or are significant to local Indian tribes for their sociocultural values. It is likely that other significant archaeological resources that have not yet been discovered, documented or evaluated are at risk from various natural and human caused threats.

Human Activities

Human activities that are currently affecting and have the potential to impact identified “at-risk” resources are as follows:

Horner Road and the Bend-Prineville Road are historic roads located between the communities of Redmond and Bend that were developed during the late nineteenth and early twentieth centuries. In total, the roads have over one hundred historical elements that contribute to their integrity and significance. The roads are currently at risk from adjacent road development and unmanaged recreational uses. Those activities have contributed to soil compaction and displacement, damage to minor engineering features, and vandalism. Disposal of trash along the roads has also become a problem. During the early 1990s an area along one of the roads was opened to woodcutting and an unknown number of historic features were destroyed.

Redmond Caves are five lava tube openings on a 40-acre parcel administered by the BLM but located within the boundaries of the City of Redmond. Evidence indicates that the location may contain important information about prehistoric lifeways. Local Indian tribes have also implied that the area may be significant to them for its sociocultural values. The area is a popular location for teenage parties and unmanaged recreational uses such as OHVs, mountain bikes, camping, cave exploration, paintball competitions, and geocaching. Disposal of trash is a problem in the area. Those activities have resulted in soil compaction, erosion, surface disturbance, vandalism and artifact collecting. Illegal use of campfires within caves is causing a build-up of soot on cave walls and ceiling areas.

Tumalo Canals are a segment of historic canals located between the communities of Redmond and Sisters that were developed during the first decades of the twentieth century. The irrigation system includes berms and troughs, raceways, diversion structures and other engineering features that contribute to the system’s integrity and significance. The canals are currently being impacted by livestock grazing and unmanaged recreational use such as horseback riding and OHV use. These activities have caused canal sidewalls to collapse and erode and soil in berms to be displaced and compacted. In some instances, historic features have been used as shooting targets.

Pictograph Cave is an unevaluated, collapsed lava tube cave that may possess important information about prehistoric lifeways. Local Indian tribes have also implied that the area may be significant to them for its sociocultural values. Currently unauthorized motorized vehicle access, rock climbing and improper cave uses are affecting the site. Unauthorized motorized use has compacted soils and displaced artifacts, visitors to the site have developed a number of user created trails, and climbers and their climbing apparatus threaten cave resources. It is likely that artifact collecting has also occurred.

Steelhead Falls is an unevaluated rock art panel between the communities of Redmond and Sisters that may possess important information about prehistoric lifeways. Unmanaged public use of the area has contributed to vandalism and user created trails.

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**Proposed Upper Deschutes Resource Management Plan and Final
Environmental Impact Statement
Volume 1 – Executive Summary and Chapters 1, 2, and 3**

