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

Lakeview Resource Area
Lakeview District Office
HC 10 Box 337
1300 South G Street
Lakeview, Oregon 97630

October 2001

Draft Lakeview Resource Management Plan/ Environmental Impact Statement

Volume 1 [of 3]

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 historic 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.

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

Draft Lakeview Resource Management Plan and Environental Impact Statement

Prepared by

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United States Department of the Interior

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Lakeview, Oregon 97630
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IN REPLY REFER TO:
1610 (015)

September 17, 2001

Dear Interested Party:

Enclosed for your review and comment is the Draft Lakeview Resource Management Plan (RMP) and Environmental Impact Statement (EIS). The Draft RMP/EIS integrates all resources and activities in the Lakeview Resource Area into a single, unified land use plan that will replace all or portions of three nearly twenty year old existing land use plans. The Draft RMP/EIS considers and analyzes five alternatives, with Alternative D identified as the agency's Preferred Alternative.

Your review and comments are needed at this time to ensure that your concerns are adequately addressed in the planning process. A 90-day public comment period is being provided for review of this document. Public meetings will be held in Lakeview, northern Lake County, and Bend, Oregon during the comment period. Additional meetings may be held in other locations if there is a sufficient demand or request for them. The comment period closing date and specific dates and locations of public meetings will be announced through the local news media, newsletters, and the BLM website (www.or.blm.gov/Lakeview/Planning/planninglist.htm).

Written comments should be sent to Dwayne Sykes, RMP Team Leader, Bureau of Land Management, HC 10 Box 337, Lakeview, Oregon 97630, or via email at d1sykes@or.blm.gov. All written comments will be fully considered and evaluated in the preparation of the Proposed RMP and Final EIS. Additional copies of the document and other supporting records may be obtained by contacting Mr. Sykes at the address above, or from the website.

Comments, including names and street addresses of respondents, will be available for public review at the Lakeview Resource Area office during regular business hours 7:45 a.m. to 4:30 p.m., Monday through Friday, except holidays, and may be published as part of the Final EIS. 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 comments. Such requests will be honored to the extent allowed by law. Anonymous comments will not be considered. 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.

We appreciate your help in this planning effort and look forward to your continued interest and participation. For additional information or clarification regarding this document or the planning process, please contact Dwayne Sykes at (541) 947-2177.

Sincerely,

Scott R. Florence

Scott R. Florence
Field Manager
Lakeview Resource Area

Enclosure, (as stated)

Draft Lakeview Resource Management Plan/Environmental Impact Statement

1. Responsible Agency: United States Department of the Interior, Bureau of Land Management.

2. Draft (X) Final ( )

3. Administrative Action (X) Legislative Action ( )

4. Abstract: The Draft Lakeview Resource Management Plan (RMP)/Environmental Impact Statement (EIS) has identified five alternatives for managing 3.2 million acres of public land in southeastern Oregon. Information provided by BLM personnel, other agencies and organizations, and the public have helped to develop the five alternatives described and analyzed in this draft plan. Alternative A is the continuation of present management. Alternative B emphasizes commodity production or extraction. Alternative C emphasizes resource values and the functioning of natural systems. Alternative D, the agency preferred alternative, provides a balance with a high level of natural resource protection and improvement in ecological conditions while allowing commodity production. Alternative E would minimize human intervention in the ecosystem and eliminate commodity production.

Major RMP issues include designation and management of special management areas, management of riparian and wetland areas, management of upland habitats, management of recreation in the resource area, and support for local Tribes and communities.

The draft document analyzes management of four existing areas of critical environmental concern (ACEC's), as well as designation and management of 12 additional proposed ACEC's. Also addressed is the suitability of wild, scenic, and recreational designations on three stream segments totaling 29 miles determined to be eligible for such designations under the "Wild and Scenic Rivers Act."

The draft document incorporates the scientific findings and assessment from the Interior Columbia Basin Ecosystem Management Project that are applicable to the planning area.

5. Date comments must be received: The close of the 90-day comment period will be announced in news releases, legal notices, individual mailings, and on the district planning webpage (www.or.blm.gov/Lakeview/Planning/planninglist.htm).

6. For Further information contact:

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Abbreviations and Acronyms

Reader note: *Refer to the list below for abbreviations or acronyms that may be used in this document.*

ACEC ~ area of critical environmental concern
APHIS ~ Agricultural Plant and Animal Health Inspection Service
AUM ~ animal unit month
BIA ~ Bureau of Indian Affairs
BLM ~ Bureau of Land Management
BMP ~ best management practice
BOR ~ Bureau of Reclamation
BPA ~ Bonneville Power Administration
CAA ~ "Clean Air Act"
CFR ~ "Code of Federal Regulations"
CWA ~ "Clean Water Act"
DLCD ~ Department of Land Conservation and Development
DOD ~ Department of Defense
DOE ~ Department of Energy
DOGAMI ~ Oregon Department of Geology and Mineral Industries
DOI ~ Department of the Interior
EIS ~ environmental impact statement
EPA ~ Environmental Protection Agency
FAA ~ Federal Aviation Administration
FERC ~ Federal Energy Regulatory Commission
FLPMA ~ "Federal Land Policy and Management Act"
ICBEMP ~ Interior Columbia Basin Ecosystem Management Project
IMP (wilderness) ~ "Interim Management Policy for Lands Under Wilderness Review" 1995
ISA ~ instant study area
LCDC ~ Land Conservation and Development Commission
LRA ~ Lakeview Resource Area
NCA ~ national conservation area
NEPA ~ "National Environmental Policy Act"
NRHP ~ National Register of Historic Places
NOAA ~ National Oceanographic and Atmospheric Administration
NPS ~ National Park Service
NRCS ~ Natural Resources Conservation Service
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
ODSL ~ Oregon Division of State Lands
ODWR ~ Oregon Department of Water Resources
OHV ~ off-highway vehicle
ONHP ~ Oregon Natural Heritage Program
PRIA ~ "Public Rangelands Improvement Act"
RMP ~ resource management plan
RNA ~ research natural area
SHPO ~ State Historic Preservation Office
SMA ~ special management area
T&E ~ threatened and endangered
TNC ~ The Nature Conservancy
USDA ~ U.S. Department of Agriculture
USDI ~ U.S. Department of the Interior
USFS ~ U.S. Forest Service
USFWS ~ U.S. Fish and Wildlife Service
USGS ~ U.S. Geological Survey
VRM ~ visual resource management
WSA ~ wilderness study area
WSR ~ wild and scenic river

Summary and Readers' Guide

Introduction

The Lakeview Resource Management Plan (RMP)/ Environmental Impact Statement (EIS) addresses options for future management of approximately 3.2 million aces of Federal surface and Federal mineral estate in southeast Oregon. This land surface and mineral estate located in Lake and western Harney Counties, Oregon, is managed by the Bureau of Land Management (BLM), Lakeview Resource Area (LRA). The RMP/EIS addresses five major issues and analyzes several alternatives to resolve these issues. These alternatives represent different combinations of resource allocations to address identified issues and future management of the planning area.

After the 90-day public comment period on the Draft Lakeview RMP/EIS closes, BLM will analyze all comments and then publish a Proposed RMP/Final EIS. The public will receive a copy of the proposed plan and have an opportunity to protest decisions they believe are adverse to their interest. After resolution of any protests, the record of decision will be issued along with the approved plan.

The approved Lakeview RMP will replace the existing management framework plans which currently guide management in the LRA. Valid decisions and guidance contained in these plans are brought forward and will be incorporated into the approved plan. In addition, advances in resource management science, changes in laws and BLM policy, and public views will also be considered. Uses of public land, decisions, and directions will be identified for management of resources including vegetation, special status species, water resources and watershed, fish, wildlife and wildlife habitat, livestock grazing, wild horses, special management areas (SMA's), cultural and paleontological resources, human uses and values, fire, recreation, off-highway vehicles (OHV's), energy and minerals, lands and realty, and roads and transportation.

The following is a brief overview of the document to assist in your review and to help you better understand the planning process.

Chapter 1

Chapter 1 identifies the purpose and need for the plan, defines the planning area, and explains public participation in this planning process. This chapter identifies the planning criteria used as guidelines influencing all aspects of the process. These guidelines are based on law, regulation, and policy. Also included in this chapter is a description of the involvement of the State, local, and other Federal agencies and various Native American Tribes. The five issues developed though public participation and the planning process are listed along with the management considerations for resolving conflicts.

In addition, Chapter 1 also explains the relationship of this planning document to the Interior Columbia Basin Ecosystem Management Project (ICBEMP) supplemental EIS. The integrated scientific assessment, the supplemental Draft EIS, and the proposed record of decision from ICBEMP were considered, and where applicable, incorporated throughout this document. The subbasin review process, which was identified by ICBEMP, is also explained in this chapter and in Appendix A1.

Chapter 2

Chapter 2 provides an overview of the planning area, and describes the existing situation for each of the resource programs. It describes both the living and nonliving components that may be affected by the proposed actions. Other components of the environment that will not be affected by the proposed actions such as climate and physical characteristics are also described. Current management direction is briefly summarized for each program. Statistics such as acres, numbers, resource condition, and designations, etc., are presented in a number of tables. Applicable findings from the ICBEMP's integrated scientific assessment are also presented for the pertinent resources.

Chapter 3

Chapter 3 presents the various management strategies for achieving the desired range of conditions. This planning document identifies management for the 20-year life of the plan. However, the long-term vision for accomplishing objectives may be 50 years or longer and may not be completely achieved under any alternative during the life of this plan.

There is also an overview of the alternatives and a description of the theme of each alternative. Five

alternatives are identified with different intensities of resources uses and management direction to resolve identified conflicts and achieve the desired range of conditions:

- Alternative A — No action;
- Alternative B — Commodity production;
- Alternative C — Resource restoration and protection;
- Alternative D — Balance between commodity production and resource protection; and
- Alternative E — Exclude commodity production.

Nonissue related uses have only small or no differences among the alternatives.

Table 3-1 presents a summary of the alternatives. The management goals and the management actions to reach those goals are briefly described for each resource program by alternative.

Each alternative is a complete land use plan that provides a framework for the multiple use management of the full spectrum of resources present in the planning area. The resource management goals address the desired future conditions of the various resources; are based on law, regulation, and policy; and project the direction management would follow. The management goals are constant across all alternatives. Each alternative (except Alternative E) would meet the management goal(s) of the various resources; however, the means for meeting each goal, the rate at which they would be met, and the impacts to resources may differ among the alternatives.

The alternatives in this RMP/EIS are designed to provide general management guidance in most cases. Specific projects for a given area or resource will be detailed in future activity plans or site-specific proposals, developed as part of the ecosystem analysis at the watershed-scale process, interdisciplinary project planning, or other means. These plans and processes address more precisely how a particular area or resource is to be managed and ensures compliance with the approved RMP's management direction. Additional "National Environmental policy Act" (NEPA) analysis and documentation would be conducted as needed. This may consist of administrative determination of NEPA adequacy, categorical exclusion, or environmental assessment.

Chapter 4

Chapter 4 analyzes the impacts of the management strategies (Chapter 3) on the existing condition (Chapter 2). There are several general assumptions listed at the beginning of the chapter that apply to all alternatives. Also, there are assumptions at the beginning of some specific resource programs to help guide the reader through the thought process.

Each resource program is analyzed by management goal through each of the alternatives, followed by an overall comparison summary of resource impacts across all the alternatives. This summary of impacts includes a statement as to whether or not the proposed actions would achieve the stated management goal under each alternative. At the end of the analysis of each resource program is a discussion of indirect, secondary, and cumulative impacts of all actions across all alternatives.

Chapter 5

Chapter 5 summarizes key events in the consultation and coordination process prior to and during preparation of the Draft RMP/EIS. It also lists those agencies, organizations, and individuals who were contacted or provided input. Also listed are the specialists who prepared this plan, and the supporting technical specialists.

Chapter 6

Chapter 6 contains the glossary and references cited in the document to assist the reader in the review process.

Table S-1.—*Comparison summary of resource impacts by alternative*

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Shrub Steppe Vegetation				
Late-seral communities would continue to improve. Disturbance regimes, such as wildland fire, juniper invasion, and weed invasion, could drive threshold of site change toward cheatgrass and other exotics.	Impacts would be similar to Alternative A, but with greater impacts from livestock grazing. Use of nonnative perennials for rehabilitation and restoration would reduce biodiversity.	Livestock grazing impacts would be reduced. Biodiversity would increase through fire use and management, weed and juniper management, and use of native species for restoration. Improvements would be on a watershed scale.	Impacts would be similar to Alternative C, but with greater impacts from livestock grazing. Biodiversity would be reduced slightly with use of native and nonnative species for rehabilitation and restoration.	No impacts would occur from livestock grazing. Greater impacts would occur from lack of wildland fire suppression and use of prescribed fire. Long-term vegetation changes could occur on a landscape scale due to increased fuel loading as a result of no livestock grazing and limited fire suppression.
Riparian/Wetland Vegetation				
Management would be on a case-by-case basis with less emphasis on watershed scale effects. Proper functioning condition would be maintained on 75% of riparian areas.	Management would be on a case-by-case basis with no emphasis on watershed scale effects. Sites would improve from juniper and aspen management. Proper functioning condition would be maintained on 75% of riparian areas.	Watershed-scale management would result in more stable conditions. Wildland fire use, prescribed fire, and weed management would restore nonfunctioning sites.	Watershed scale management would result in more stable conditions. Wildland fire use, prescribed fire, and weed management would restore nonfunctioning sites, but at a slower rate.	Nonfunctioning riparian/wetland sites may not recover without active restoration. Natural recovery of uplands is offset by juniper expansion. Long-term changes to upland habitats could occur on a landscape scale due to limited fire suppression.
Forest and Woodland				
Forests would be treated to maintain forest health with full suppression of wildland fires.	Forests would be treated to maintain forest health.	Forests would be treated to maintain forest health.	Forest would be treated to maintain forest health.	No forest or woodland management program. Juniper stands would increase and quaking aspen stands would decline.
Invasive juniper would be treated on case-by-case basis, up to 20,000 acres per year.	Treatment of up to 200,000 acres of invasive juniper stands would increase grass and shrubs on a landscape basis.	Treatment of up to 200,000 acres of invasive juniper stands would increase grass and shrubs on a landscape basis.	Treatment of up to 150,000 acres of invasive juniper stands would increase grass and shrubs on a landscape basis.	Long-term changes to forest and woodlands could occur on a landscape scale due to increased fuel loading as a result of limited fire suppression.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Special Status Plants				
Plants and habitat would improve slowly. Detrimental impacts would continue from wildfire, invasive weeds,and livestock and wild horse grazing.	Populations would remain static or possibly decline due to increased commodity use. Protection of individual plants or populations may be required. Fire management would enhance habitat.	Individual plants and populations would be managed in 10 ACEC's. Off-highway vehicle (OHV) designations would keep vehicles off special status plant habitat. Restoration and enhancement would be emphasized over maintenance and protection.	Impacts would be similar to Alternative C, except that OHV use would have more potential to impact special status plants within remaining open areas, but less than under Alternatives A and B. Restoration and enhancement would be equal to maintenance and protection.	There would be no impacts from livestock grazing or other permitted uses. Impacts from OHV's would be reduced. No restoration, enhancement, or protective fencing could lead to decline in populations.
Noxious Weeds and Undesirable Invaders				
Introduction and spread of weeds would continue. One weed management area plan would be in effect.	Emphasis on commodity production could enhance introduction and spread of weeds. Two weed management area plans would be in effect.	Introduction and spread of weeds would be reduced. Two weed management area plans would be in effect.	Introduction and spread of weeds would be potentially greater than Alternative C. Two weed management area plans would be in effect.	Weed management would be limited with probable increase in weed invasion. Lack of fire rehabilitation would increase weed invasion. No weed management area plans would be in effect.
Soils				
Impacts from projects could result since best management practices (BMP's) are applied on a casc-by- case basis. Impacts could result on 2,510,908 acres from OHV use off existing roads.	Impacts from projects would be reduced since BMP's would be applied in all cases. Impacts could result on 2,507,474 acres from OHV use off existing roads.	Impacts from projects would be minimal since fewer projects would be done and BMP's would be applied in all cases. OHV's impacts would be greatly reduced since no areas are designated open.	Impacts from projects would be more than C since more projects would be done. BMP's would be applied in all cases. With 2,038,044 acres open to OHV use, impacts would be less than under Alternatives A and B.	Impacts would be the same as Alternative A, except that OHV's impacts would be greatly reduced since no areas are designated open.
Water Resources and Watershed Health				
Conditions would improve slowly. Management would be case-by-case rather than watershed scale.	Impacts would be similar to Alternative A but recovery would be slower.	Recovery rates would be accelerated with more stable conditions. Management and subsequent improvement would be on a watershed scale.	Recovery rates would be accelerated with more stable conditions. Management and subsequent improvement would be on a watershed scale.	Improvement and progression toward late-seral community would be accelerated. Sites needing active restoration would continue to degrade.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Fish and Aquatic Habitat				
Conditions would improve but slowly. Management would be case-by-case rather than watershed scale.	Impacts would be similar to Alternative A, but recovery would be slower.	Recovery rates would be accelerated with more stable conditions. Management and subsequent improvement would be on a watershed scale.	Recovery rates would be accelerated with more stable conditions. Management and subsequent improvement would be on a watershed scale.	Improvement and progression toward late-seral community would occur. Sites needing active restoration would continue to degrade.
Wildlife and Wildlife Habitat				
Bighorn habitat would improve at site-specific locations.	Increased human activity could displace bighorns. Juniper treatments would improve habitat.	Bighorn habitat as a whole would improve. Juniper would be managed in bighorn habitats.	Impacts would be similar to Alternative C, but would occur less quickly.	Changes to bighorn habitat on a landscape scale could occur due to lack of fire management.
Sagebrush-dependent species would continue to decline.	Sagebrush-dependent species would continue to decline.	Areas in moderate to low ecological condition would be restored. Sagebrush-dependent species would increase slowly.	Impacts would be similar to Alternative C, but results would be achieved at a slower rate.	Potential long-term changes to sagebrush steppe and upland habits could occur on a landscape scale due to increased fuel loading as a result of no grazing and limited wildland fire suppression.
Habitats would remain relatively static.	Some habitats, such as Wyoming big sagebrush, would decline.	Important habitats would be restored. Habitat would improve on a landscape basis.	Impacts would be the same as Alternative C, but would occur more slowly.	
13,691 animal unit months (AUM's) would be allocated to wildlife. Minimal competition with livestock for forage.	22,081 AUM's would be allocated to wildlife. Minimal competition with livestock for forage.	22,081 AUM's would be allocated to wildlife. Minimal competition with livestock for forage.	22,081 AUM's would be allocated to wildlife. Minimal competition with livestock for forage.	No allocation would be necessary.
Special Status Animal Species				
Management would be on a site-specific basis. Habitat improvement and species recovery would occur slowly.	Impacts would be similar to Alternative A, but improvement and recovery would take longer.	Management would be on a watershed level. Improvement and recovery would occur more quickly.	Impacts would be similar to Alternative C, except that improvement and recovery rates would be somewhat slower.	Marginal special status species and habitats may not recover. Long-term changes to upland habitats could occur on a landscape scale due to increased fuel loading as a result of no grazing and limited wildland fire suppression.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Livestock Grazing				
Current levels of grazing use (108,234 AUM's) would continue. Standards and guidelines would be met.	Grazing use levels would increase 10% (119,057 AUM's). Standards and guidelines would be met.	Grazing use levels would be reduced 20% (86,587 AUM's). Standards and guidelines would be met.	Current levels of grazing use (108,234 AUM's) would continue. Standards and guidelines would be met.	No grazing would be authorized.
241,112 acres are closed or unallotted to grazing.	241,112 acres are closed or unalloted to grazing.	313,551 acres are closed or unalloted to grazing.	241,112 acres are closed or unalloted to grazing.	3,161,416 acres (entire resource area) closed to grazing
Wild Horses				
Impacts from other resource management would be minimal. Appropriate management level numbers would remain the same in two existing herd management areas.	Impacts from other resource management would be minimal. Appropriate management level numbers would remain the same in two existing herd management areas.	Impacts from other resource management would be minimal. Appropriate management level numbers would remain the same in two existing herd management areas.	Impacts from other resource management are minimal. Appropriate management level numbers would be increased 30 head in Paisley Herd Management Area.	Impacts from other resource management are minimal. Appropriate management level numbers remain the same in two existing herd management areas.
Areas of Critical Environmental Concern				
Scenic, biological, geologic, and cultural features would be managed and protected in four existing areas of critical environmental concern (ACEC's) (167,565 acres).	Scenic, biological, geologic, and cultural features would be managed and protected in four existing ACEC's (167,020 acres) [1]	Scenic, biological, geologic, and cultural features would be managed and protected in four existing ACEC's areas (185,039 acres). [2]	Scenic, biological, geologic and cultural features would be managed and protected in four existing ACEC's areas (185,039 acres). [2]	Special management and protection for scenic, biological, geologic, and cultural resources would be revoked.
No new ACEC's would be designated.	Botanical and cultural resources would be managed and protected in one new ACEC (3,599 acres).	Scenic, biological, botanical and cultural features would be managed and protected in 12 new ACEC's (129,130 acres).	Scenic, biological, botanical, and cultural features would be managed and protected in 12 new ACEC's (123,656 acres).	Special management for scenic, biological, botanical and cultural features in 12 areas (129,130 acres) would not be implemented.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Wilderness Values				
No acquired lands adjacent to wilderness study areas (WSA's) would be extended interim management protection.	No acquired lands adjacent to WSA's would be extended interim management protection.	1,194 acres in three WSA's would be added to WSA's and extended interim management protection	1,194 acres in three WSA's would be added to WSA's and extended interim management protection.	1,194 acres in three WSA's would be added to WSA's and extended interim management protection.
Wild and Scenic Rivers				
No streams would be recommended administratively suitable. Outstandingly remarkable values would be managed and protected in those/that stream segment(s).	No streams would be recommended administratively suitable. Outstandingly remarkable values would be managed and protected in those/that stream segment(s).	Three streams would be recommended administratively suitable. Outstandingly remarkable values would be managed and protected in those/that stream segment(s).	One stream would be recommended administratively suitable. Outstandingly remarkable values would be managed and protected in those/that stream segment(s).	No streams would be recommended administratively suitable.
Cultural and Paleontological Resources				
Legal requirements would be met.	Legal requirements would be met.	Legal requirements would be met. Traditional use areas and cultural plants would be protected in eight ACEC's (125,383 acres).	Legal requirements would be met. Traditional use areas and cultural plants would be protected in eight ACEC's (120,350).	Legal requirements would be met. Traditional use areas and cultural plants would be subject to natural processes.
Air Quality				
Wildland fires would produce up to 7,500 tons particulate matter in 10 years. Prescribed fires would produce up to 10,000 tons/10 years.	Wildland fires would produce up to 8,750 tons particulate matter in 10 years. Prescribed fires would produce up to 16,000 tons/10 years.	Wildland fires would produce up to 15,000 tons particulate matter in 10 years. Prescribed fires would produce up to 32,000 tons/10 years.	Wildland fires would produce up to 15,000 tons particulate matter in 10 years. Prescribed fires would produce up to 24,000 tons/10 years.	Wildland fires would produce up to 20,000 tons particulate matter in 10 years.
Fire Management				
Benefits of prescribed fire would be limited to approximately 20,000 acres/year. Restoration of fire regimes and reduction of fuel loading would occur slowly.	Prescribed fire and wildland fire use would enhance ecosystem condition on up to 64,000 acres/year. Restoration of fire regimes and reduction of fuel loading would occur slowly.	Prescribed fire and wildland fire use would enhance ecosystem condition on up to 640,000 acres/year. Restoration of fire regimes and reduction of fuel loadings would be accelerated.	Prescribed fire and wildland fire use would enhance ecosystem condition on up to 480,000 acres/year. Restoration of fire regimes and reduction of fuel loadings would be accelerated.	Long-term changes to upland habitats could occur on a landscape scale due to limited fire suppression.

Alternative A— Continue present management	**Alternative B**— Emphasize commodity production and public uses	**Alternative C**— Emphasize protection of natural values	**Alternative D**— Protect and improve natural values while providing commodity production	**Alternative E**— Exclude commodity production and limit other uses, maximize natural processes
SOILS				
Management Goal—***Manage soil on public lands to maintain, restore, or enhance soil erosion class and watershed improvement and protect areas of fragile soil using best management practices (BMP's).***				
1. Protect and manage soils and implement BMP's through NEPA on a project-by-project basis.	1. Protect and manage soils by implementing BMP's on all potentially surface-disturbing activities.	1. Same as for Alternative B.	1. Same as for Alternative B.	1. Same as for Alternative B.
WATER RESOURCES/WATERSHED HEALTH				
Management Goal 1—***Protect or restore watershed function and processes which determine the appropriate rates of precipitation capture, storage, and release.***				
1. Maintain or improve watershed condition where needed, as previously identified in land use plans.	1. Maintain stable watershed condition and improve watershed condition where needed. Use active restoration techniques where appropriate.	1. Maintain good watershed condition and improve watershed condition where needed.	1. Same as for Alternative C.	1. Allow natural processes to restore watershed condition.
2. On a case-by-case basis, close unnecessary roads or where resource damage is occurring. Construct and maintain roads to minimum standards.	2. Close roads not needed for commodity use or damaging commodity resources. Construct new roads to meet BMP's.	2. Close and rehabilitate all roads on public lands not required by law. Do not increase the road density in any watershed with a low road density. Minimize new road construction.	2. On a case-by-case basis, close and rehabilitate all roads on public lands not needed for private land access, permit administration, law enforcement, or fire protection.	2. Close and rehabilitate all roads on public lands except those required by law. Allow no new roads except when required by law.
3. Continue existing upland grazing systems and exclosures.	3. Manage upland livestock grazing to meet minimum standards.	3. Manage livestock grazing to promote healthy watershed which include productive soil, native vegetation, and biological crusts. Prohibit management activities and uses, except when mandated by law, in perennial and intermittent drainages where such activities would adversely impact watershed function or processes.	3. Manage livestock grazing to maintain minimum conditions of a healthy watershed which include mostly productive soils, native vegetation, and some biological crusts.	3. Exclude livestock grazing from the resource area. Remove existing exclosures.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Energy and Minerals Acres of Restrictions by Potential				
Locatable minerals				
10 percent of high potential and 2 percent of moderate potential would be closed. 11 percent of high potential and 71 percent of moderate potential would be open subject to restrictions.	2 percent of moderate potential would be closed. 11 percent of high potential and 71 percent of moderate potential would be open subject to restrictions.	86 percent of high potential and 62 percent of moderate potential would be closed. 5 percent of high potential and 34 percent of moderate potential would be open subject to restrictions.	10 percent of high potential and 2 percent of moderate potential would be closed. 9 percent of high potential and 70 percent of moderate potential would be open subject to restrictions.	100 percent of high and moderate potential areas would be closed.
Leasable Minerals				
36 percent of high potential and 16 percent of moderate potential would be closed. 52 percent of high potential and 40 percent of moderate potential would be open subject to no surface occupancy or other stipulations.	36 percent of high potential and 16 percent of moderate potential would be closed. 52 percent of high potential and 39 percent of moderate potential would be open subject to no surface occupancy or other stipulations.	36 percent of high potential and 19 percent of moderate potential would be closed. 72 percent of high potential and 81 percent of moderate potential would be open subject to no surface occupancy or other stipulations.	36 percent of high potential and 16 percent of moderate potential would be closed. 52 percent of high potential and 42 percent of moderate potential would be open subject to no surface occupancy or other stipulations.	100 percent of high and moderate potential would be closed.
Salable Minerals				
94 percent of high potential and 48 percent of moderate potential would be closed. 3 percent of high potential and 9 percent of moderate potential would be open subject to restrictions.	94 percent of high potential and 48 percent of moderate potential would be closed. 3 percent of high potential and 9 percent of moderate potential would be open subject to restrictions.	98 percent of high potential and 94 percent of moderate potential would be closed. 1 percent of high potential and 6 percent of moderate potential would be open subject to restrictions	94 percent of high potential and 45 percent of moderate potential would be closed. 1 percent of high potential and 6 percent of moderate potential would be open subject to restrictions.	100 percent of high and moderate potential would be closed.
Lands and Realty				
Land sales would be limited to 42,500 acres.	Land sales would be limited to 54,800 acres.	Land sales would be limited to 8,000 acres.	Land sales would be limited to 8,000 acres.	No land sales would occur.
Rights-of-way avoidance and exclusion areas would encompass 441,860 acres and 137,118 acres, respectively.	Rights-of-way avoidance areas would encompass 571,860 acres. There would be no exclusion areas.	Rights-of-way avoidance and exclusion areas would encompass 2,206,778 acres and 696,442 acres, respectively.	Rights-of-way avoidance and exclusion areas would encompass 1,281,696 acres. There would be no exclusion areas.	The entire RA, 3,161,416 acres, would be a rights-of-way exclusion area.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Roads and Transportation				
Approximately 100 miles of road would be maintained each year.	Approximately 100 miles of road would be maintained each year.	Approximately 100 miles of road would be maintained each year.	Approximately 100 miles of road would be maintained each year.	Approximately 50 miles of road would be maintained each year.
Less than 50 miles of new road would be constructed.	Less than 50 miles of new road would be constructed.	Less than 25 miles of new road would be constructed.	Less than 25 miles of new road would be constructed.	Less than 25 miles of new road would be constructed.
235 miles of roads in special management areas (SMA's) would be closed. [3]	235 miles of roads in SMA's would be closed. [3]	502 miles of roads in SMA's would be closed. [3]	412 miles of roads in SMA's would be closed. [3]	25 miles of roads would be closed.

[1] 545 acres are removed from the Lost Forest/Sand Dunes/Fossil Lake ACEC due to a boundary adjustment.
[2] 545 acres are removed from the Lost Forest/Sand Dunes/Fossil Lake ACEC due to a boundary adjustment, and 18,019 acres are added to Lake Abert ACEC.
[3] Miles of road closures are for special management areas only. Roads outside of special management areas could be closed as described in the text. For Alternatives A and B, miles shown closed are for existing closures.

Chapter 1 — Introduction

Purpose and Need

Resource management in the Lakeview Resource Area (LRA) is currently directed by three management framework plans that were completed in the early 1980s. Because of new issues and concerns, and changes in management policies, regulations, and demands on resources; these plans no longer provide the adequate and comprehensive planning direction needed for management of resources. The Lakeview Resource Management Plan/Environmental Impact Statement (Lakeview RMP/EIS) will provide the Lakeview District of the Bureau of Land Management (BLM) with a comprehensive framework for managing public land within the LRA (Map I-1). Completion of the RMP/EIS will meet the mandate of the "Federal Land Policy and Management Act" (FLPMA) of 1976 that public land be managed for multiple use and sustained yield under an approved resource management plan.

A primary goal of this RMP is to develop management practices that ensure long-term sustainability of a healthy and productive landscape. A RMP is a set of comprehensive, long-range decisions concerning the use and management of resources administered by the BLM. In general, the RMP does two things: (1) it provides an overview of goals, objectives, and needs associated with public lands management, and (2) it resolves multiple use conflicts or issues that drive preparation of the RMP.

This plan also considers and, where appropriate, incorporates the science and findings derived from the assessments of the Interior Columbia Basin Ecosystem Management Project (ICBEMP). These findings were important in defining the complexity and scope of the issues being addressed in the Lakeview RMP/EIS. When the record of decision is issued for the ICBEMP Final EIS, the appropriate objectives, standards, and management direction will be incorporated into this document, or, if necessary, amend the management direction for the LRA.

Planning Area

The planning area includes all of the LRA except for approximately 31,500 acres administered by the Burns District and addressed in the Three Rivers RMP. In addition, the planning area includes approximately 2,172 acres in the Surprise Field Office in California that the LRA has responsibility for managing through a cooperative agreement. Map I-1 shows the relationship between the district boundary and the RMP planning area. For the purposes of this document, the terms LRA, RMP area, and planning area are synonymous. The LRA covers over 3.1 million acres (Table 1-1), most of which is in Lake County and some in Harney County, Oregon. BLM-administered land, or public land, is generally well-blocked .

The planning area is bordered on the east by the Burns BLM District; on the south by the Modoc National Forest, Sheldon National Antelope Refuge, and BLM Surprise Field Office in Nevada and California; on the west by the Fremont and Deschutes National Forests; and on the north by the Prineville BLM District. Most of the public land is contiguous. Some scattered parcels occur in the north end of Lake County around Christmas Valley and in the south end of the county near Lakeview.

Existing Management Plans

The current management direction for the LRA is in three existing management framework plans: the "Warner Lakes," "Lost River," and "High Desert Management Framework Plans" (BLM 1983), as amended (BLM 1989; 1996); and the "Lakeview Grazing Management Final Environmental Impact Statement and Record of Decision" (BLM 1982). Any management action proposed within the resource area must conform to the direction in these documents. Actions that do not conform require a plan amendment or must be dropped from consideration. To date, three plan amendments have been completed. The "Warner Lakes Management Framework Plan" was amended in 1989 to officially designate the Warner Wetlands area as an area of critical environmental concern (ACEC) and to prescribe special management direction. The "High Desert Management Framework Plan" was amended in 1996 to officially designate the Lake Abert area as an ACEC and to prescribe special management for the area. The "Warner Lakes Management Framework Plan" was amended in December 1998 to adopt a proposal for exchange of land jurisdiction between the BLM, LRA, and the U.S. Fish and Wildlife Service (USFWS) Hart Mountain National Wildlife Refuge. The two agencies initiated joint planning in 1997 to transfer 12,880 acres of BLM-managed lands to the refuge, and to transfer 7,870 acres of lands managed by

Table 1-1.—*Land ownership/administration by county within the Lakeview Resource Area*

Ownership/administration	Lake County	Harney County	Washoe County (Nevada)	Total
Bureau of Land Management				
Public domain	2,333,304	744,907	2,172	3,080,383
Acquired lands	81,032	0	0	81,032
Subtotal	2,414,336	744,907	2,172	3,161,416
U.S. Forest Service	264	0	0	264
U.S. Fish and Wildlife Service	625	0	0	625
Department of Defense	2,623	0	0	2,623
Oregon State lands	111,187	15,974	0	127,161
Private	817,204	38,148	93	855,445
Other [1]	78,504	0	0	78,504
Grand totals	3,424,743	799,029	2,265	4,226,037

[1] Constitutes meander-surveyed lake beds, local government, and acres of unknown ownership.

the Hart Mountain National Wildlife Refuge to the LRA. However, before the final plan amendment was completed, congressional legislation authorizing the transfer was signed in late 1998. Those decisions from the management framework plans, as amended, that are still valid have been incorporated into the Lakeview RMP/EIS, which will supercede all previous planning documents.

Planning Process

The RMP is a land use plan as prescribed by FLPMA. The RMP establishes in a written document:

- Land areas for limited, restricted, or exclusive resource uses or for transfer from BLM administration;
- Allowable resource uses and related levels of production or use to be maintained;
- Resource condition goals and objectives to be reached;
- Program constraints and general management practices;
- Identification of specific activity plans required;
- Support actions required to achieve the above;
- General implementation schedule or sequences; and
- Intervals and standards for monitoring the plan to determine its effectiveness.

The underlying goal of the RMP is to provide efficient on-the-ground management of public lands and associated resources over a period of time, usually up to 20 years. The procedure for preparing a RMP involves nine interrelated actions as shown in Table 1-2.

Public Involvement in the Planning Process

Public involvement is an integral part of BLM's resource management planning process. Thus far, public involvement activities have included a mass mailing of a scoping brochure, holding public meetings, meeting with local government and Tribal government officials, conducting a subbasin review (see Appendix A1), and mailing the "Summary of the Analysis of the Management Situation" (BLM 2000).

The LRA began its public involvement in June 1999 with the mailing of a brochure that briefly described the RMP/EIS process, outlined the planning schedule, and requested comments on the first major planning

Table 1-2.—*Steps in the BLM planning process*

Planning step	Definition/Purpose	Status
1) Identification of issues	▪Orients the planning process to the significant resource management problems and land use conflicts in the area covered by the plan.	Completed July 1999
2) Development of planning criteria	▪The standards or rules developed by the manager and interdisciplinary team to focus the planning process on the issues and management concerns.	Ongoing
3) Inventory and data collection	▪Baseline information is collected on an ongoing basis in support of resource management. Information about all ecosystem components, including human uses, is necessary to prepare a plan that meets requirements and is legally defensible.	Ongoing
4) Analysis of the management situation	▪The study and assessment of public land resources data for the area covered by the plan; completes the information base for formulating reasonable alternatives.	Completed May 2000
5) Formulation of alternatives	▪The development, analysis, and documentation of a reasonable range of multiple use management options that resolves conflicts and issues and provides a basis for future management.	Completed January 2001
6) Estimation of the effects of the alternatives	▪The consequences of the resource management alternatives are analyzed and documented.	Completed June 2001
7) Selection of preferred alternative	▪Based on a comparison of the estimated effects and tradeoffs associated the alternatives, a preferred alternative is identified in the Draft RMP/EIS.	Completed June 2001
8) Public review and comment on Draft RMP/EIS	▪After selection of preferred alternative the Draft RMP/EIS is distributed for 90-day public review and comment.	Fall 2001
9) Selection of the resource management plan	▪Selecting the proposed plan and preparing the Proposed RMP/Final EIS based on evaluation of public comments of the Draft RMP/EIS.	Winter 2002
10) Public protest period on published Proposed RMP/Final EIS.	▪Publication of the Proposed RMP/Final EIS initiates a 30-day public protest period. Following resolution of any protests, the plan is approved and a record of decision issued.	Spring 2002
11) Monitoring and evaluation	▪Indicates the effectiveness of plan decisions and related management prescriptions. May go on for the life of the plan. Results are used to determine if the plan needs amending or revising.	Ongoing after plan approval

step—identification of issues. The brochure was sent to approximately 500 individuals, organizations, agencies, and offices. BLM invited the public to identify issues or concerns they believed should be addressed in the RMP process. A notice of intent to prepare the RMP was published in the *Federal Register* at the same time. This notice also announced the dates and locations of two public meetings that would be held. A news release with the same information was published in the "Lake County Examiner" and in the "Klamath Falls Herald and News." BLM representatives attended meetings with the Lake County Commissioners and the Harney County Court to inform them of the RMP and to encourage them to make comments, request information, and generally be involved in the process. The same information was distributed to the governing bodies of the Klamath Tribes, Burns Paiute Tribe, and the Fort Bidwell Tribe. Other meetings with the Tribes

have also taken place at key steps in the planning process.

From August 1999 through February 2000, BLM conducted a subbasin review which involved other Federal land managing agencies, state agencies, and local and Tribal governments. This review resulted in the identification of a number of findings and management concerns to be addressed in the RMP/EIS.

Members of the public, local and Tribal governments, other Federal agencies and state agencies were mailed copies of the "Summary of the Analysis of the Management Situation" and were asked to comment, particularly on the planning criteria and proposed RMP/EIS alternatives. Approximately 60 comment letters were received.

Planning Issues

As a result of internal and external scoping, the following five comprehensive issues were identified to be addressed in the RMP/EIS:

Issue 1. ***What areas, if any, should be designated and managed as special management areas (SMA's) including ACEC designations, wild and scenic rivers (WSR's), or other?***

FLPMA and BLM policy (BLM 1987; 1988) require the BLM to give priority to designation and protection of ACEC's during the land use planning process. Since completion of the management framework plans in the 1980s, a number of areas have been proposed for ACEC designation. Two areas, Lake Abert and Warner Lakes, were designated through management framework plan amendments.

Approximately 20 nominated areas were reviewed by the resource area staff. Twelve of these areas were found to meet the criteria as potential ACEC's. Several of these are also potential research natural areas (RNA's). In addition, three streams were evaluated and found to be eligible for designation as WSR's.

Questions to be answered in resolving Issue 1.

- Which areas should be designated as ACEC's, RNA's, WSR's, or other designations?
- Which designations are most appropriate for which areas?
- How should designated areas be managed?
- What resources will be protected as a result of designation and management?
- What values, particularly economic, will be enhanced or foregone as a result of designation?
- How would designation and management of areas affect other resources and their management?
- How should the Lost Forest/Sand Dunes/Fossil Lake existing ACEC be managed?
- Should boundaries or management of existing SMA's be changed, and if so, how?

Issue 2. How can upland ecosystems be managed and restored to achieve desired range of conditions?

The vegetation on upland range provides the foundation for many uses of resources on public land. Structurally diverse plant communities provide habitat for wildlife as well as forage for domestic animals. A healthy cover of perennial vegetation stabilizes the soil, increases infiltration of precipitation, slows surface runoff, prevents erosion, provides clean water to adjacent streams, and enhances the visual quality of the public land. Resource uses can affect the natural function and condition of upland communities.

The expansion of juniper woodlands into other plant communities, riparian areas, and quaking aspen groves and an increase in the density of historic woodlands may be detrimental to other plants and watershed functions.

Historically, wildland fire played an important role in ecosystem processes in the resource area. Existing plans do not address the possible use of wildland fire as a management tool.

Questions to be answered in resolving Issue 2.

- What is the current condition of the various ecosystems and plant communities in the planning area, and how can their conditions be improved or maintained?
- How should the public lands in the planning area be managed to improve and maintain water quantity and quality and to promote hydrologic recovery?
- How should the public lands be managed to

maintain the existence, promote recovery, and prevent listing of threatened and endangered (T&E) species?

- How should vegetation be allocated to provide forage for grazing animals including livestock, wild horses, and wildlife; as well as to provide wildlife habitat and watershed protection?

- Where are noxious weeds located in the planning area, and how can their spread be controlled?

- What is the fire history in the planning area, and what is the appropriate role of fire in the management of vegetation resources on the public lands?

- Which best management practices (BMP's) should be implemented to improve and protect watersheds?

Issue 3. How can riparian areas and wetlands be managed to protect and restore their natural functions?

The vegetation in riparian areas and wetlands provides the foundation for many uses of resources on public land. Structurally diverse plant communities provide habitat for wildlife as well as forage for livestock. In addition, healthy riparian areas and wetlands stabilize the soil, act as a sponge releasing water throughout the year, prevent erosion, and improve water quality for adjacent streams. Some resource uses affect the natural function and condition of riparian areas and wetlands. These uses include livestock grazing, recreation, forest and woodland management, mineral exploration and mining, road construction and maintenance, and off-highway vehicle (OHV) use.

Questions to be answered in resolving Issue 3.

- How should riparian vegetation communities be managed to improve or maintain proper functioning condition?

- What kind of resource uses can be allowed in riparian areas without degrading riparian conditions?

- How should riparian systems be managed to improve or maintain habitat quality for fish, wildlife, plants, and invertebrates?

- How should riparian and wetland areas be managed to incorporate State of Oregon water quality standards and approved management plans addressing water quality concerns?

- How should management actions in upland ecosystems be developed or designed to be compatible with the needs of riparian communities?

- Which BMP's should be implemented to reduce erosion into streams?

Issue 4. How should recreation be managed to meet public demand while protecting natural values and health and safety of the public?

Recreation use in the resource area is increasing, especially in north Lake County. There is a demand for both developed and undeveloped recreation opportunities. OHV use needs to be managed including determining appropriate designations for areas in the LRA regarding OHV use. There is an increasing demand for access to the LRA by "outdoor therapy" groups. This increasing use has resulted in conflicts with local residents. Hunting, camping, fishing, rock hounding, sightseeing, and pleasure driving are the most common recreation activities in the LRA.

Questions to be answered in resolving Issue 4.

- What types and level of recreation should the planning area provide?

- What role should BLM serve in promoting or providing opportunities for tourism?

- How should outdoor therapy groups be managed to meet the needs of these groups while ensuring safety of the public and adjacent property owners?

- Should other recreation sites be developed to provide for public use?

- Can high use recreation areas such as the Sand Dunes be managed to allow continued recreation use while protecting resources? If so, how?

- How should the extensive recreation management areas be managed?

- Is there a need for any additional roads to provide access to areas currently inaccessible to BLM, commercial interests, or the public?

- Which areas should be designated open, limited, or

closed to OHV use?

- Which roads, if any, should be closed or limited in their use?
- What roads, if any, are appropriate for special designations such as back country byways or back country discovery routes?

Issue 5. How should public lands be managed to meet the needs of local communities and Native American Tribes?

The communities in the resource area are generally small and isolated. As such, they have a great reliance on the public lands, including those in the national forest, to provide economic benefits to local communities, including jobs. In addition, a number of Native American groups consider the resource area part of their ancestral homelands and want to continue to have access to the land for ceremonial and religious purposes and to hunt wildlife and gather plants for various traditional uses.

Questions to be answered in resolving Issue 5.

- What is an appropriate role for BLM in providing support to local communities?
- How should the public lands be managed to provide economic support to local communities?
- How should the public lands be managed to meet the needs of Tribal self-sufficiency and traditions?
- How can conflicts between agency actions and Tribal needs and expectations be minimized or avoided?

Issues Eliminated from Detailed Study

During the scoping process and the initial phases of plan development, a number of alternatives and issues were identified, and after discussion and review, were eliminated from further consideration.

Grasshopper Control

Periodic outbreaks of grasshoppers occur in the planning area and can be a significant problem. The last outbreak which was treated in the planning area occurred in 1993. BLM has a memorandum of understanding (which may be reviewed annually as needed) with the U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS) for the control of grasshoppers on public lands in the district. The "Rangeland Grasshopper Cooperative Management Program EIS for the Western States" was completed by USDA-APHIS in 1987 and is scheduled to be updated in 2001. An environmental assessment of the local effects of the USDA-APHIS control was completed for the Lakeview District (Lake and Klamath Counties) in 1995 and tiers to the programmatic EIS. This EIS is currently being updated. As such, grasshopper control in the planning area was not considered to be a planning issue.

Determination that Lands are Chiefly Valuable for Grazing

One issue that has been raised in the recent past relates to making a determination of which lands within the resource area are "chiefly valuable for livestock grazing." Section 1 of the "Taylor Grazing Act" states that "... the Secretary of the Interior is authorized, in his discretion, by order to establish grazing districts or additions thereto and/or to modify the boundaries thereof, of vacant, unappropriated, and unreserved lands from any part of the public domain of the United States ...which in his opinion are chiefly valuable for grazing and raising forage crops." It is the BLM's position that the Secretary of Interior already made this determination when grazing districts were established.

Interior Columbia Basin Ecosystem Management Project Scientific Assessment Findings

The ICBEMP science integration team identified a number of findings from the scientific assessment (USDA-FS and USDI-BLM 1996) relevant to issue identification across the Interior Columbia Basin. The Lakeview subbasin review team reviewed these findings and determined that most of them applied to the subbasin review area. These are discussed further in Appendix A of this document. Those findings determined not to be applicable to BLM-administered land in the Lakeview planning area (Appendix A2) have been dropped from further analysis.

Implementation and Effectiveness Monitoring

In a written response to the "Summary of the Analysis of the Management Situation," the Wildlife Management Institute suggested that another issue be addressed in the plan: "How will the extent of RMP implementation and its effectiveness in resolving identified issues be determined?" This issue was eliminated from analysis as a new planning issue since

an overall monitoring plan will be developed, as well as monitoring of individual resources occur, regardless of the alternative selected.

The monitoring plan will be issued as part of the RMP record of decision. After the record of decision is issued, an implementation plan will be developed based on budget priorities to guide implementation of the RMP. On-the-ground monitoring of resource management actions and RMP tracking will determine the extent and effectiveness of implementation. This information will be summarized in the annual planning update. In addition, a formal RMP evaluation will be conducted on a periodic basis (usually every 5 years) to determine the extent and effectiveness of plan implementation.

Planning Criteria

Planning criteria are the standards, rules, and measures used for data collection and alternative formulation which will guide final plan selection. Planning criteria are developed from appropriate laws and regulations, BLM manual sections, policy directives, as well as from concerns expressed by the public and other agencies. They provide a basis for judging the responsiveness of the planning decisions and the planning process to law, guidance, the results of public participation, and consultation with other agencies.

Planning criteria influence all aspects of the planning process, including inventory and data collection, development of issues to be addressed, formulation of alternatives, estimation of effects, and selection of the preferred alternative.

Planning criteria help to:

- Streamline the plan's preparation and focus;
- Establish standards, analytical techniques, and measures to be used in the process;
- Guide development of the RMP;
- Guide and direct issue resolution; and
- Identify factors and data to consider in making decisions.

Principles of ecosystem management, as well as a continuing commitment to multiple use and sustained yield, will guide land use decisions in the planning area. The commitment to multiple use will not mean that all land will be open for all uses. Some uses may be excluded on some land to protect specific resource values or uses. Any such exclusion, however, will be based on laws or regulations or be determined through a planning process subject to public involvement.

The Lakeview RMP/EIS is being prepared using the best available information. Limited inventories were conducted to gather additional data for some resources.

Appendix B contains a detailed description of the planning criteria and legal authorities used in the development of this RMP/EIS.

Relationship to Federal Agency Plans

The LRA adjoins the Surprise Resource Area along the Oregon, California, and Nevada borders. The two offices operate under a memorandum of understanding that provides for the Surprise Field Office to manage a small area in Oregon, and the Lakeview Office to manage two small areas in California and Nevada. Parts of the Twelvemile Creek potential WSR and a portion of the Rahilly-Gravely proposed ACEC extends into California and Nevada. By agreement with the California State Director and the Surprise Field Office Manager, this RMP includes description and analysis of the California BLM-administered lands. However, a final decision on those lands will be made by the California State Director when the appropriate planning document(s) is completed. The Surprise Field Office anticipates beginning revision of its existing land use plan in 2002.

A number of land use or resource management plans have been developed by the BLM and other Federal agencies which relate to or otherwise govern how management is currently carried out within the planning area. The BLM is responsible for determining if the proposed resource management plan is in conformance with these plans. The following Federal plans have been identified as applicable to the planning area and, unless otherwise noted, the Lakeview RMP/EIS is believed to be in conformance with these plans. Where appropriate, the management direction and previous management decisions set forth by these documents are used to tier analyses performed in this plan, or are incorporated by reference, and therefore, are not repeated in detail within this document. Therefore, pertinent decisions already established by these documents are not being revisited here, but are merely mentioned to give the reader a broad perspective of all management direction pertinent to the planning area.

- "Oregon Wilderness Final Environmental Impact

Statement" (BLM, 1989a) and Record of Decision (BLM, 1991a)—evaluated the impacts of and recommended to Congress designation of certain wilderness areas within the State of Oregon, including 11 areas within the LRA.

- "Interim Management Policy and Guidelines for Lands Under Wilderness Review" (BLM 1995b).

- The "National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands" (BLM 2001).

- "Vegetation Treatment on BLM Lands in Thirteen Western States Final Environmental Impact Statement" (BLM 1991b).

- "Northwest Area Noxious Weed Control Program Final Environmental Impact Statement" (BLM 1985).

- "Supplement to the Northwest Area Noxious Weed Control Program Final Environmental Impact Statement" (BLM 1987).

- "Site-Specific Environmental Assessment Tiered to the 1987 Final Environmental Impact Statement for Rangeland Grasshopper Cooperative Management Program" (APHIS 1993)—covers the periodic need to control grasshopper outbreaks in various rangeland and agricultural areas. The lead for this type of action rests with APHIS, but the BLM does cooperate when treatment involves lands under its administration.

- "Rangeland Grasshopper Cooperative Management Program Final Environmental Impact Statement" (APHIS 1987).

- "Wildlife Damage Management in the Roseburg ADC District in Southwestern Oregon" (APHIS 1994)—covers wildlife damage management activities in the LRA. APHIS is the lead agency for this action. The BLM served as a cooperating agency in the preparation of this environmental assessment and decision.

- "Healthy Rangelands" (BLM and USFS 1994; BLM 1995a; 1997a;) and "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" (S&G's) (BLM 1998a). These plans amend current grazing and other land management direction by applying new standards and guidelines.

- "Bonneville Power Administration Right-of-Way Vegetation Management FEIS/ROD" (BPA 2000a; 2000b)—evaluates the impacts of vegetation management activities on Bonneville Power Administration (BPA) rights-of-way crossing Federal lands.

- "Public Land Recreation, A Management Strategy for Special Recreation Management Areas in Oregon and Washington" (BLM 1988)—outlines special management direction for special recreation management area in Oregon and Washington, including the Warner Wetlands Special Recreation Management Area.

- "Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Management Guidelines" (BLM et al. 2000)—outlines interim management guidelines for greater sage-grouse and its habitat to be implemented until replaced by a long-term protective strategy.

- "Management Framework Plans for the High Desert, Warner Lakes, and Lost River Resource Areas" (BLM 1983a, 1983b, 1983c). Historically the Lakeview District was comprised of three resource areas. Due to a reorganization of the Lakeview District in the late 1980s, the majority of the Lost River Resource Area became what is now known as the Klamath Falls Resource Area. The Lakeview Planning Unit portion of the Lost River Resource Area was transferred, along with the High Desert and Warner Lakes Resource Areas to the newly formed LRA as part of this reorganization. The three management framework plan's, along with the "Lakeview Grazing Management Final Environmental Impact Statement and Record of Decision"(BLM 1982a; 1982b) form the main foundation of the existing management direction for the LRA and are described in more detail under Alternative A, the no action alternative. Some of this direction will also be carried forward into other management alternatives in this RMP. Some of this direction will be replaced in other alternatives.

- Since these management framework plans were completed, three plan amendments have also been completed. Two amendments address the designation and management of two ACEC's (BLM 1989c; 1989b; 1990b; 1990c; 1990d; 1996c; 1996d). The third addresses a transfer of land management

jurisdiction with the Hart Mountain National Antelope Refuge (USFWS and BLM 1998a; 1998b). This amendment was completed by congressional legislation in 1998 and designates the boundary and management for the Guano Creek WSA Cooperative Management Area. The direction contained in these three amendments will be brought forward in this RMP as management common to all alternatives.

- A number of activity-level plans have also been completed in recent years. Six were prepared to address specific resource management issues within the Warner Wetlands ACEC (BLM 1990e; 1990f; 1990g; 1990h; 1990i; 1990j). Several mining plans of operations have been prepared (BLM 1993;1996e; 1996f). Multi-year noxious weed management plans (BLM 1994b; 1995e), a fire management plan (BLM 1998e), off-highway vehicle plans (BLM undated a; undated b), and wild horse management plans have been prepared (BLM 1977a; 1977b; 1994g; 1995c). Several wildlife habitat management plans have been completed ("Fort Rock-Silver Lake Habitat Management Plan," "Paisley Habitat Management Plan," "North Warner Lakes Habitat Management Plan," "South Warner Lakes Habitat Management Plan," "Warner Aquatic Habitat Management Plan," "High Desert Aquatic Habitat Management Plan," and "Rosebud/Edmonds Well Habitat Management Plan" (BLM 1980c; 1980d; 1981a; 1984a; 1984b; 1986a; 1986b; 1993d). One vegetation management plan has been completed for the Black Hills area (BLM 1981b). Numerous allotment management plans have been completed (BLM 1975; 1990g; 1994b; BLM and USFWS 1998a; 1998b). An existing process is in place for authorizing temporary nonrenewable livestock grazing use (BLM 1989). All of these documents are considered part of the existing management direction and will be included in the description of Alternative A and other alternatives in this RMP where appropriate.

- The "Western Regional Corridor Study" (Western Utility Group 1993) shows existing, designated, and future potential utility corridors for most Western states, including Oregon. The BLM is required to use this study as a reference document when considering land use decisions that may affect existing and/or proposed major utility corridors.

- "Hart Mountain National Antelope Refuge Comprehensive Management Plan" (USFWS 1994a; 1994b) contains the management direction for the adjacent Hart Mountain Refuge and the Guano Creek Wilderness Study Area Cooperative Management Area located on BLM-administered lands. This area and the associated management direction was described in a draft plan amendment/environmental assessment prepared jointly by the USFWS and BLM (1998a; 1998b) and by Congress in the "Oregon Public Lands Transfer and Protection Act" of 1998. The management direction for this area, as outlined in these two plans, legislation, and the 1995 "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP) (BLM 1995), will be considered common to all alternatives analyzed in this RMP.

- The "Recovery Plan for the Native Fishes of the Warner Basin and Alkali Subbasin: Warner Sucker (Threatened) *Catostomus warnerensis*, Hutton Tui Chub (Threatened) *Gilia bicolor* spp., Foskett Speckled Dace (Threatened) *Rhinichthys osculus* spp." (USFWS 1998) outlines recovery strategies for three Federally listed species. This direction will be considered common to all alternatives analyzed in this RMP.

- "Juniper Firewood Cutting" (USDI-BLM 1991; 1999), EA No. OR-010-90-14, analyzed the effect of cutting juniper for firewood, poles, and other uses from 10 locations covering about 45,000 acres. The decision allows juniper removal from 6 of the 10 areas analyzed.

- The latest or final versions of biological opinions related to the Warner sucker or conservation agreements/strategies associated with sensitive plants and animals.

- Military uses of BLM-administered lands are authorized under existing laws and regulations. Current uses within the LRA include: a low altitude military operations area utilized by the 142nd Fighter Group of the Oregon Air National Guard (Air National Guard Readiness Center 1993), rescue training operations by the 304th Rescue Squadron (USDA-FS and USDI-BLM 1998) at two sites in northern Lake County, and a withdrawal for the backscatter radar site operated by the Department of the Air Force (1984).

- "Mining Occupancy in the General Sunstone Area" (EA No. OR-010-98-5), analyzed the impacts of occupancy of mining claims in the sunstone mining

area within the Rabbit Basin (USDI-BLM 1998).

- Potential geothermal, oil, and gas leasing within the resource area has ben evaluated in several existing documents (UDSI-BLM undated; 1976; 1981). Two existing mining operations occur on the LRA under a plan of operation; one for diatomaceous earth and one for perlite (USDI-BLM 1993; 1996).

Consultation with U. S. Fish and Wildlife Service

In December 2000 the LRA initiated consultation with the USFWS regarding potential impacts of actions proposed in the Lakeview RMP to Federally listed species or species proposed for listing. This is in conformance with the memorandum of agreement between the BLM and the USFWS dated August 30, 2000. A lead representative for the USFWS was designated. That individual was sent Lakeview RMP material for review and input to the process. The USFWS sent the LRA a list of species either federally listed or proposed for listing that may occur in the planning area. Species that are known to occur in the planning area are addressed in this Draft RMP/EIS. A biological opinion or concurrence will be requested on the Proposed RMP/Final EIS.

Relationship to the Interior Columbia Basin Ecosystem Management Project

"The Interior Columbia Basin Ecosystem Management Project (ICBEMP) was established in 1994 . . . to develop and then adopt a scientifically sound, ecosystem based strategy for managing all USFS- or BLM-administered lands within the (interior Columbia) Basin" (USDA-FS 1996). The ICBEMP covers an area of 145 million acres including all of Eastern Oregon. Fifty-three percent of the ICBEMP area is public land managed by the BLM or the USFS. As part of the project, a science integration team was set up and directed to "... study ecological, economic and social systems; examine current and historical conditions; and evaluate whether outcomes from current practices and trends would be consistent with long-term maintenance of ecological integrity and ecosystem health." (USDA-FS and USDI-BLM 2000c). This was all done at the basin scale. The size of this area requires a "step-down" process to bring findings and information down to a local level where they could be applied in a USFS or BLM management unit such as a ranger district or resource area. This is called the subbasin review process. The ICBEMP area was divided for analysis and review into four geographic scales: broad-scale (interior Columbia Basin), mid-scale (subbasins or groups of subbasins), fine-scale (watershed), and site scale (project). The mid-scale or subbasin level is the level at which field offices would do long-range planning for all resources within their respective administrative boundaries. This scaled analysis is summarized in Table A1-1.

As part of the preparation to write the Lakeview RMP/EIS, the Lakeview Field Office conducted a subbasin review. The subbasins are based on the U.S. Geological Survey (USGS) 4th field hydrologic unit codes. On average these 4th field hydrologic unit codes comprise an area of 500,000 to 1,000,000 acres. The Lakeview subbasin review area included four subbasins wholly or partially within the LRA identified in the ICBEMP scientific assessment: Summer Lake, Lake Abert, Warner Valley, and Guano comprising an area of approximately 6.5 million acres. Land ownership and administrative responsibilities included private, State of Oregon, USFS, BLM, USFWS, and Department of Defense. The majority of the land in the subbasin review area is administered by BLM, Lakeview Resource Area.

In addition, the science integration team identified a number of relevant issues applicable across the interior Columbia Basin. The Lakeview subbasin review team reviewed these findings and determined that most of them applied to the subbasin review area. Appendix A1 of this document contains a complete report of the subbasin review conducted by the team. Those findings applicable to BLM-administered land in the Lakeview planning area have been incorporated into the issues or management concerns addressed in this RMP/EIS.

In March 2000 an ICBEMP supplemental draft EIS was published followed in December 2000 with a Proposed RMP/Final EIS and proposed record of decision (USDA-FS and USDI-BLM 2000a, 2000b, 2000c). These documents analyzed three alternatives for management of the USFS- and BLM-administered lands in the basin. A number of the objectives, standards, and guidelines identified in the proposed record of decision were incorporated into the management alternatives in this RMP where they were applicable. However, not all management direction from the proposed record of decision was incorporated into this Draft Lakeview RMP/EIS since a final decision has not yet been issued. Should a final decision be issued, it will automatically amend existing management direction and will be incorporated into the Proposed Lakeview RMP/Final EIS. At this point in the process,

the Lakeview RMP/EIS is consistent with the scientific findings from the project and objectives, standards, and guidelines developed for the ICBEMP proposed record of decision.

Relationship to State and Local Government Plans

State Plans

The RMP's consistency with the State of Oregon's statewide planning goals is shown in Appendix B2. The Department of Land Conservation and Development's "Oregon's Statewide Planning Goals" guide land use planning within the State (DLCD 1995). This requires local governments to develop their own comprehensive plans which implement the State's goals on the local level. Also shown in Appendix B2 are goals from Oregon Department of Fish and Wildlife (ODFW) management plans for deer and elk and Division of State Lands asset management prescriptions for State lands.

The Governor and various state agencies will be given an opportunity to review the Proposed Lakeview RMP/Final EIS and comment on its consistency with their goals, policies, and plans.

The RMP is consistent with the "Oregon Statewide Comprehensive Outdoor Recreation Plan," which was last updated by the "Oregon Outdoor Recreation Plan: 1994–1999." The "Oregon Outdoor Recreation Plan" is one of several documents which make up the "Oregon Statewide Comprehensive Outdoor Recreation Plan." The "Oregon Statewide Comprehensive Outdoor Recreation Plan" is being revised beginning in 2001 and is scheduled to be completed in 2002.

Lake County Plan

Lake County has an existing land use plan developed in response to the State of Oregon's requirements. The plan consists of a number of reports, ordinances, and subsequent amendments governing land use practices and policies within the county (Lake County 1979; 1983; 1989a; 1989b; 1989c; 1992).

In 1992 the county passed an "Emergency Ordinance and Interim Public Land Management Plan" (Lake County 1992) to supplement the existing land use plan, as amended. This ordinance does not support the designation of any additional wilderness areas or RNA's within the county.

The Lake County Commissioners are being provided with an opportunity to review the Lakeview RMP/EIS and comment on its consistency with their approved plans and policies.

Harney County Plan

Harney County has an existing land use plan developed in response to the State of Oregon's requirements. The Harney County Commissioners are being provided with an opportunity to review the RMP/EIS and comment on its consistency with their approved plans and policies.

Relationship to Tribal Government Plans

Five recognized Tribal governments are known to have an interest in the LRA: The Klamath Tribes, Confederated Tribes of the Warm Springs Reservation, Burns Paiute Tribe, Fort McDermitt Tribe, and Fort Bidwell Tribe. The LRA area manager and RMP team leader have met with Tribal leaders of the Klamath Tribes, Burns Paiute, and Bidwell Tribes to discuss the Lakeview RMP/EIS and to identify Tribal goals, needs, or plans which may conflict with or support any of the alternatives. Additional meetings will occur at key points during the process (see Chapter 5).

Chapter 2 — Affected Environment

Planning Area Profile

The resource management plan planning area (RMP area or planning area) includes all of the Lakeview Resource Area (LRA) except for approximately 31,000 acres of the resource area managed by the Burns District. The planning area also takes in 2,172 acres of the Surprise Resource Area of the Susanville District in Nevada for which the LRA has management responsibility (Map I-1).

This chapter describes the current condition, amount, location, use, and demands etc., of each of the resources in the planning area that could be affected by the actions described in Chapter 3. A description of physical aspects such as geology and climate are given not because these could be affected by management actions. Instead, the framework of the physical environment in which actions would be taking place is described.

History of the Resource Area

Indigenous people have lived in what is now the LRA for more than 12,000 years. Europeans first entered this area in 1826, when Peter Skene Ogden of the Hudson Bay Company crossed the area while exploring the Great Basin. No further interest was shown until John C. Fremont, representing the United States Government, explored the area in 1843. Fremont's explorations were published and widely read in the United States, creating an interest in the West (Fremont 1956). However, because of the dry conditions, rugged environment, and lack of farmable land, much of the Great Basin was ignored. It served only as a transportation route for early settlers heading to California and Oregon. The Oregon Central Military Road, which was used to transport supplies from Eugene, Oregon, to Fort Boise, Idaho, was created in 1867. While little used, it began to open up what would later become Lake County to development.

In 1866, the military established the first Camp Warner on what is today Hart Mountain. It was later moved to a location west of Warner Valley in order to provide settlers and travelers protection from the Northern Paiute Indians. Oregon became a state in 1859, when several transportation routes were bringing ever larger numbers of settlers into the State. In 1867, the first settlers entered the Goose Lake Basin and soon began settling throughout the region. New Pine Creek, Oregon, the oldest town in Lake County, was established in 1869. Lake County was established by State legislature in 1874. At that time, it included what is presently Klamath and Lake Counties. The site that was to become Lakeview had its first residence built in 1872 and was selected as county seat in 1876.

The decades of 1870 and 1880 saw the settlement of much of the region and the establishment of towns throughout the area. The main focus of settlement and economic development was ranching and livestock. Logging became a major focus in later years. Towns and villages such as Paisley, Summer Lake, Silver Lake, Fort Rock, Adel, and Plush served as trade, supply, and civic centers for the ranches and homesteads that developed. Lands occupied were primarily within the rich valley basins and river bottoms of the area. The rest of the land was used primarily for open range grazing and harvesting trees for lumber. To a limited degree, mining helped focus attention on the area.

In the early 1900s, there was an occupation boom in the Fort Rock and Christmas Valley area. Between 1902 and 1912, nearly all the available land within these areas was homesteaded and filed upon. For a few years, these settlers were able to work and make a living with dry land farming techniques. However, when rainfall diminished, the farms failed and were abandoned. Where there had once been 18 post office locations, only two survive today at Fort Rock and Christmas Valley. The communities of Lakeview, Paisley, Silver Lake, Fort Rock, Summer Lake, Christmas Valley, Adel, and Plush remain the centers of civic life in the region, with Lakeview being the largest community in the county. Other locations, especially in northern Lake County, have disappeared from the map.

Physical Characteristics

The LRA lies in the northwest portion of the Great Basin. Traditionally, this area has been placed within the Basin and Range Physiographic Province, which is bordered to the north by the High Lava Plains Physiographic Province. Consequently, the planning area displays the characteristics of both provinces. Anderson et al. (1998) divides the planning area into three divisions: High Desert, Klamath, and Mazama Provinces. This division is based on physiography, geology, and soils. Over 75 percent of the planning area is

classified as High Desert Province. The rest of the area is classified Klamath Province (18 percent) and Mazama Province (7 percent).

Physiography

The geology of this part of the Great Basin is characterized by uncompacted stream- and lake-deposited sediments and a variety of volcanic and sedimentary rocks. Some scientists estimate that these sediments and rocks range in age from early Oligocene (38 million years ago) to Holocene (recent). They have been displaced and broken-up by Miocene- to Pleistocene-age (15 million to 11,000 years ago) faults. This has resulted in the north- to northwest-trending mountains and valleys characteristic of this area. These ridges and valleys are divided crossways by two fault systems, a dominant northwest-southeast trending set, and a northeast-southwest trending set. All watersheds in the planning area are internally drained, which is characteristic of the Great Basin. However, in the geologic past, Goose Lake spilled into the Pit River, which eventually reaches the Pacific Ocean.

Many of these undrained basins contain saline playa lakes and large accumulations of alkali. The relatively young volcanic eruptions of the High Lava Plains Province is responsible for some of the outstanding volcanic features found in the RMP area. Lava flows, volcanoes, cinder cones, lava tubes, and explosion features occur throughout the RMP area, with the youngest of these in the Christmas Valley/Fort Rock area.

The entire resource area is within the limits of Mesozoic (240 to 66 million years ago) and Paleozoic (570 to 240 million years ago) marine sedimentary basins. Significant accumulations of hydrocarbon-bearing marine sediment may lie beneath the younger volcanic and volcanic-derived sedimentary rocks in some areas.

The elevation in the RMP area ranges from 4,103 feet at Summer Lake to 7,885 feet at Beaty Butte and 8,456 feet at Drake Peak.

Climate

The planning area has a semiarid climate with long, cool, moist winters and short, warm, dry summers. The average annual precipitation is between 8–18 inches, depending on elevation, with the majority of moisture coming in the winter and spring. Temperatures can range from below 0 degrees Fahrenheit in the winter to more than 90 degrees Fahrenheit in the summer. Average monthly temperatures range from 28.7 degrees in January to 62.5 degrees in July. However, freezing temperatures can occur any time of the year. Climatic data from elsewhere in the Northern Great Basin and southeastern Oregon indicates that 7 out of 10 years in the past have been affected by drought (BLM 1998g).

Plant Communities

Shrub Steppe

Ecological Provinces and Subbasins of Southeastern Oregon

Introduction

Four subbasins as defined by the U.S. Geological Survey (USGS) in the RMP area are centered around (1) the Paulina Marsh and Silver Lake (Silver Lake Subbasin), (2) the Chewaucan Marsh drainage into Lake Abert (Lake Abert Subbasin), (3) the Warner Wetlands drainage (Warner Lakes Subbasin), and (4) the Beaty Butte country (Guano Subbasin), which drains into the Guano system. There are also small, Bureau of Land Management (BLM)-administered holdings within the Goose Lake drainage. Remnants of Pleistocene pluvial (glacial melt and rain-filled) lakebeds exist in these four major drainages. The evidence of these extensive inundations exist in exposed shoreline terraces and visible wave-action beach lines. Present-day climate is uniformly dry and cold with frosts that can come any day of the year. Climate varies widely from location to location at any given time, both seasonally and from year to year, even though the climate is generally dry with extremes of cold and hot (Anderson 1998). Pollen records demonstrate that extreme changes can occur rapidly from year to year and that resiliency of species is the norm; predictability is not the norm (Miller and Wigand 1994).

The High Desert Province

The High Desert Province is characterized by large and small closed basins surrounded by extensive terraces formed by the ancient lakes. Between the closed basins are low basaltic ridges, hilly uplands, isolated buttes such as Beaty Butte, mountains such as St. Patrick and Warner, and block-faulted igneous formations such as Abert Rim and Poker Jim Ridge. The rainfall varies from 8 inches of precipitation at Plush to 10.2 inches on Hart Mountain; average annual precipitation in this

province is 9.7 inches. On the northwest part of this province, the boundary between High Desert and Mazama Provinces is a belt rather than a distinct line determined by the pumice mantle and/or lava flows from Mazama, Paulina, and other volcanoes (Anderson 1998).

When Europeans came to the High Desert Province, it was occupied by the Klamath, Warm Springs, and Northern Paiute Tribes (Aikens 1986). Today, these Tribal people live in towns, on ranches, or on reservations (Klamath Tribes, Warm Springs Confederated Tribes, Burns, or Fort Bidwell). Many of them were hunter-gatherers and used the land as part of their yearly collecting cycles. There is evidence of their manipulating the landscape with fires (Kelly 1932) and digging for roots in the marshes (Fremont 1956). There is evidence of much earlier occupations (more than 10,000 years ago) in Fort Rock Cave and in the presence of early-style projectile points (see the section on archaeology.) Archaeological evidence at Connley Caves, pollen records from several sites in the region, tree ring analyses, and paleontological evidence from Fossil Lake all help reconstruct past climates and vegetation changes over time in this province (Aikens 1986; Aikens and Jenkins 1994)

According to the 1936 "Forest Type Map of Oregon," at that time stands of western juniper were on upland areas scattered across the High Desert Province. In 1936, in the area north and northwest of Silver Lake, juniper stands collectively covered an estimated 18,000 acres. From the vicinity of Cougar Mountain, scattered juniper stands existed eastward nearly to Wagontire Mountain; in 1936, they collectively covered an estimated 185,000 acres. Natural stands of western juniper in this province are usually associated with rocky or very stony uplands, lava flows, and ridges where understory vegetation is insufficient to burn during wild fires. Ponderosa pine exists in a few places in this province along the western edge and northwestern part of the province and on BLM land in the northern part of Warner Mountains. These pines are located where 18 inches of rain falls annually. An ecological oddity, the Lost Forest, northeast of Christmas Lake Valley, contains ponderosa pine with some juniper growing on sandy soils. This isolated sand dune area receives only 8.7 inches of rain annually. The isolated stand of pine lies about 25 air miles east of the nearest pine forest, which is in the Mazama Province.

The huge number of closed basins that typify the High Desert Province include perpetually dry lakebeds, lakebeds that are inundated infrequently and for short periods, perpetual lakes that fluctuate in size over time, and wetland and marshes that are reasonably perpetual. Vegetation on the bottomlands and around these lakes varies according to the frequency, depth, and duration of inundations. This RMP area is almost entirely a natural shrub-grassland steppe on uplands. Sagebrush strongly dominates among a wide variety of shrub species commonly growing in this province. At least 30 shrub species on upland sites and 15 shrub species on bottomland sites have been recorded consistently in this province. The sagebrush species and subspecies are reasonably site-specific and related to soils where they grow (Anderson 1998).

Predominate grass species in the arid shrub-grasslands include bluebunch wheatgrass, Idaho fescue, Thurber's needlegrass, bottlebrush squirreltail, and Sandberg's bluegrass. The more arid, sand dune sites may include Indian ricegrass, creeping wildrye, needle-and-thread grass, and thickspike wheatgrass. Some forb species are widespread in this province; however, a few are specifically oriented to local situations and will be discussed under the section on sensitive plant species.

The Klamath Province

The Klamath Province abuts the High Desert in the southwest corner of the subbasin review area; the division from the High Desert Province is based on changes in soils. The Province boundary in the study area begins at the Oregon/California border southwest of Adel and extends north to Honey Creek. It then extends west and northwest to Valley Falls, south of Paisley, across Picture Rock Pass, and west about 5 miles south of Silver Lake into the headwaters of Bridge Creek to the junction of the High Desert, Klamath, and Mazama Provinces. The Klamath Province is characterized by high elevation basaltic mountains, such as Warner Mountains, and Dead Indian Mountain; and Winter Rim, although none of these peaks reach timberline. The average annual precipitation for this portion of the Province is 14 inches, 35 percent of which falls between April and July. The exceptions are Winter Rim, which averages 35 inches per year, and Crane Mountain, which averages 65 inches annually (Anderson 1998).

At contact with Europeans, the Klamath Province was inhabited by Modoc, Klamath, and Northern Paiute Tribes, who used the RMP area seasonally for hunting and plant gathering. These Tribal people had little impact on the Province's natural resources, although they did use fire and other means of landscape manipulation (Aikens 1993).

According to the 1936 "State of Oregon Forest Type Map," which predates extensive logging activities, about 70 percent of the Lake County part of Klamath Province was covered by trees, primarily ponderosa pine. Only about 1 percent of the Lake County part of the Province was covered in juniper stands. As in the Mazama Province, the Province was not heavily used until after World War II (Stephenson and Boydstun 1994). Since then, radical changes in this province include expanded juniper coverage and forest cutting practices.

The Mazama Province

The Mazama Province in this RMP area is characterized by a continuous mantle of aeolian deposits of pumice and other volcanic materials that extend from Brothers in the north to Buck Creek in the south, paralleling Highway 31 and south to the junction of the three provinces. Most of the Mazama Province lies between 4,000 and 5,000 feet, and consists of hilly to mountainous topography interspersed with basins. Innumerable large and small buttes, cones, and ridges formed by volcanism dot the landscape. Fields of raw lava and pumice are common. The rainfall in this portion of the province demonstrates the "rain shadow" effect of the Cascades. The Mazama Province averages around 18 inches per year, compared to 145 inches annually in the Three Sisters area to the west (Anderson 1998).

At contact with Europeans, Mazama Province was occupied by the Klamath, Warm Springs, and Northern Paiute Tribes. These people used the area seasonally as part of their collective rounds and had little or no impact on the area (Aikens 1993).

According to the 1936 "State of Oregon Forest Type Map," which predates extensive logging activity in the area, about 4 percent of the Mazama Province was open and unforested (sagebrush), 10 percent was in stands of western juniper, and 20 percent was in stands of lodgepole pine (some related to fire activity). For most of the entire Province and the area represented in this study, 55 percent was covered by stands of ponderosa pine with some small areas including Douglas-fir and other minor species. In the RMP area, there are thick stands of bitterbrush as an understory and in isolated communities (Anderson 1998).

Logging in the section of Mazama Province that is in the RMP area was minimal until after World War II. Because of the lack of roads and transportation for lumber, logging operations were small. One company used a railroad to the Bend area. It was not until the 1980s that logging and replanting of trees began on a large scale in this province (Tonsfeldt 1987, 1988).

Existing Plant Communities

Introduction: The vegetation in the planning area is discussed at three levels. The top level is the entire subbasin, which includes all three provinces, the mid-level is the actual plant communities themselves, and the project level consists of the ecological sites, which describe the potential for plant communities on specific soils.

The uplands of the High Desert Province in Oregon is almost entirely a natural shrub-grassland dominated by different species of sagebrush—sagebrush species are very site-specific. Basin big sagebrush grows mainly on sites having moderately deep, loamy soils, such as those on droughty bottomlands and fans, while Wyoming big sagebrush is present almost everywhere throughout the uplands of the province. The habitat is similar to big sagebrush, but occurs on sandier or more gravelly soils. Mountain big sagebrush is dominant above 5,500 feet on gravelly or stony upland soils. Low sagebrush is strongly dominant on shallow to very shallow stony upland lithic soils, but also grows mixed among other sagebrush species on moderately deep, very gravelly mountain slopes. Silver sagebrush is on some intermittent lakes and in areas around playas inundated part of the year. Bud sagebrush grows only on the most arid uplands in the province, which are very shallow, very stony soils and are usually alkaline in nature. The distribution of black sagebrush is rare in southeastern Oregon, but it grows in several extensive stands in the Province on the shallowest soiled scablands (Anderson 1998; Kagan and Caicco 1996).

The existing plant communities and acres of coverage are described in Table 2-1.

Big sagebrush shrubland: Big sagebrush shrubland is the most common vegetative cover type in southeastern Oregon. It appears as a mosaic with shrub-steppe communities over much of the unwooded areas along mountain range foothills and expansive extents in the valley floor. There are several different mixtures of plants within the big sagebrush mosaics. These are big sagebrush (1) with perennial grasslands, (2) with annual grasslands (cheatgrass), (3) within crested wheatgrass seedings, (4) with a variety of shrubs, such as squaw apple or bitterbrush, and (5) in some limited areas on well-drained ash soils and in wetland mosaics. Other plant combinations featuring sagebrush as the

Table 2-1.—*General vegetation classes on BLM-administered lands within the planning area*

Vegetation type	Acres	Description
Agriculture	14,262	Areas modified for crop growing.
Big sagebrush shrub/grassland	1,709,758	Most common vegetative cover in southeastern Oregon; can occur with various understory plants.
Black sagebrush/grassland	4,235	Has limited distribution in the province; usually grows in very shallow soils.
Low sagebrush shrub/grassland	397,875	Found sporadically throughout eastern Oregon, generally on areas with shallow basalt soils; usually has sparse canopy cover.
Miscellaneous shrub/grassland	70,476	Usually consist of mountain mahogany, bitterbrush, and snowberry communities with a bunchgrass understory; they are often on steep slopes or in association with western juniper.
Mixed conifer forest	1,255	A close-canopied, upper montane or mountain forest type that can be represented by several plant communities containing a number of pine and fir species and a variety of understory shrubs and herbaceous vegetation.
Modified grassland	249,140	Extensive grasslands and shrub grasslands of southeastern Oregon that were formerly composed of native bunchgrasses have been planted with crested wheatgrass, usually after a fire; in some areas, cheatgrass has invaded and become well established.
Mountain big sagebrush/grassland	8,064	Occur at higher elevations on plateaus and rocky flats with minimal soil development.
Ponderosa pine forest	14,076	Widespread forest type in eastern Oregon; usually found in the foothills margin bordering the upland conifer types on the national forests; widely spaced, over-story pines often cover western juniper or other conifers; the shrub and herb layers form a diverse and prominent ground cover component in this forest type.
Quaking aspen	2,063	Widely scattered throughout the coniferous forest and sagebrush grasslands of eastern Oregon; can be found in isolated pockets and may be mixed with western juniper which is replacing the quaking aspen on many sites.
Riparian and wetlands	40,676	Extremely valuable far beyond their limited distribution; the variety of shrubs, grasses, and forbs present depends on the degree and duration of wetness and shade at each location.
Salt desert shrub/grassland	261,019	Occurs in alkaline playa or dry lake basins of Great Basin Ecoregion of the resource area; especially prominent around Lake Abert, Summer Lake, Alkali Lake, and Warner Lakes Basin; consists of salt-tolerant shrubs and grasses.
Silver sagebrush shrub/grassland	27,161	Usually found in moist playas or on semi-alkaline flats and valley bottom lands.
Unvegetated	56,686	Seasonally wet or dry playas, bare rock, recent burns, and barren lava flows.
Vegetated lava flow/sand dune	73,371	Large expanses of barren lava fields and aeolian sands with occasional isolated patches of tall and low sagebrush communities occur throughout the area.
Western juniper woodland	215,052	Areas of open-canopy woodland with western juniper as primary tree species; understory vegetation usually dominated by sagebrush species, and western juniper is often an invader into sagebrush grass community as a result of fire suppression.

dominant plant are big sagebrush (1) with spiny hopsage, (2) with black greasewood, (3) with shadscale, (4) with limited distribution of winterfat, and (5) mixed with low or silver sagebrush.

Native grasses range from a mere presence of grass to an abundance of grass depending on site history and beneficial soil/water relations. Native perennial bunchgrasses include bluebunch wheatgrass, Sandberg's bluegrass, Idaho fescue, Great Basin wildrye, junegrass, needle-and-thread grass, Thurber's needlegrass, western needlegrass, and, in more disturbed situations, bottlebrush squirreltail. Introduced grasses are primarily annual cheatgrass and perennial crested wheatgrass.

Black sagebrush/grassland: Black sagebrush has a limited distribution in the High Desert Province and is considered a "rare type" in this province. This plant community often occurs on shallow scabland soils on plateaus and gentle slopes. The sites have extensive areas of exposed rock and often do not have enough vegetation to support wildland fires (see proposed Foley Lake Area of Critical Environmental Concern [ACEC]/Research Natural Area [RNA]), Special Management Areas section). Sandberg's bluegrass usually is the dominant grass that makes up most of the vegetation cover; however, other bunchgrasses also occur on these sites. Black sagebrush is the dominant, and often only, shrub present on these sites. In some areas, these black sagebrush stands can be extensive or occur in a mosaic with low or big sagebrush. Occasionally, bitterbrush is found as well. Gray rabbitbrush and Truckee green rabbitbrush also occur on these sites.

Silver sagebrush/grassland: The silver sagebrush/grassland community is usually found in playas, which are moist, semi-alkaline flats or valley bottomlands. Some of the playas are quite extensive. Silver sagebrush occurs in playas because of its tolerance of the alkalinity and standing water. This tall shrub community is moderately- to widely-spaced. It grows in areas that have been deflated (eroded by wind) and subsequently partially filled with sediment. Although rhizomatous species such as creeping wildrye, milkvetch, and cress occasionally occur, the understory can be dominated by widely-spaced, often robust bunchgrasses such as Nevada bluegrass, mat muhly, and alkali grass. Silver sagebrush is the dominant and characteristic shrub of this community; however, green rabbitbrush is a common associate.

Low sagebrush/grassland: Low sagebrush communities are found throughout eastern Oregon, generally on areas with shallow, clayey soils of basalt origin. Low sagebrush is the primary dominant, and often the only shrub in the stand; however, Sandberg's bluegrass is also commonly found. Other associate grasses are bluebunch wheatgrass, Idaho fescue, and bottlebrush squirreltail. Low sagebrush is usually the dominant vegetation in shallow soil and in rocky, claypan conditions that exclude the formation of other sagebrush and shrub types. In many cases, low sagebrush does not form extensive landscape-level covers but is part of the large big sagebrush and sagebrush mosaic. The sites have extensive areas of exposed rock and often do not have enough vegetation to support wildland fires. Low sagebrush can also occur within a quaking aspen mosaic. In the spring when the snow melts and soils warm, these areas are rich in colorful diversity from the perennial and annual wildflowers that grow there.

Mountain big sagebrush/grassland: Mountain big sagebrush communities occur on plateaus, mountain toeslopes, and stony flats with minimal soil development at high elevations in the High Desert Province. This medium to medium-tall shrubland varies with widely-spaced to fairly dense shrubs that occur on deep-soiled to stony flats, ridges, and mountain slopes, and usually in cool, moist areas with some snow. In this community, Idaho fescue is the most common and diagnostic grass. Mountain big sagebrush is the dominant and only important shrub, but low sagebrush can occur in some places. Other shrubs that can occur are chokecherry, serviceberry, snowberry, bitterbrush, and buckthorn. Occasionally, mountain big sagebrush grows in snowbank areas or other moist sites within this community. Few trees occur in this community, but quaking aspen and mountain mahogany may be present. This is a forb-rich community where paintbrush, potentilla, geum, lupines, and buckwheat species are abundant.

Miscellaneous shrub/native perennial grassland: Mountain mahogany shrubland is found on the steep, rocky slopes, and mountain ridges in southeastern Oregon. It usually appears as a minor component within the western juniper woodland types or grades in and out of sagebrush steppe. This cover type is commonly encountered but generally exists as units too small to be mapped. This widely-dispersed tall shrub community grows in rock talus, rock outcrops, and in the soil pockets within the rocky slopes along with big sagebrush. It can be the dominant overstory vegetation with occasional western juniper and low sagebrush or bitterbrush, several buckwheats, and some grasses (bluebunch wheatgrass, Sandberg's and Nevada bluegrasses, Idaho fescue, and western and Thurber's needlegrasses).

Bitterbrush communities are found in a medium-tall shrubland steppe with bunchgrass or cheatgrass understory. Bitterbrush can be dominant or codominant with big sagebrush. Idaho fescue is the characteristic native bunchgrass, with bluebunch wheatgrass codominant at lower elevations, while western needlegrass is dominant at higher elevations and where soils are sandier (Anderson 1998). Sedge species replace it at the higher elevation sites. Rabbitbrush species are common associates. Basin big sagebrush and mountain big sagebrush grow as codominants in areas. Juniper and ponderosa pine are occasionally found as isolated individuals in this plant community.

Snowberry communities are found on steep slopes between alpine habitats and riparian or sagebrush steppe. They are usually in areas with some soil development, north-facing, often very steep slopes and can be in a mosaic with quaking aspen groves. Thurber's needlegrass, bluebunch wheatgrass, Idaho fescue, and Sandberg's bluegrass are found as understory. Many forbs grow in the area with snowberry, as do mountain mahogany, quaking aspen, and mountain big sagebrush. Juniper can be found with these shrubs at lower elevations.

Brush/clearings: These plant communities are the result of human actions (such as physically removing brush or tree plantations) or the result of fires (wild or prescription).

Alkaline plant communities—salt desert scrub/ grassland: This plant community occurs in the alkaline playa lake basins of the Northern Great Basin of Lake County. It is especially prominent around Lake Abert, Summer Lake, Alkali Lake, and the Warner Lakes. These are low to tall shrub communities comprised of dispersed alkali-tolerant vegetation. Salt desert scrub is a "catchall" term that describes several differing environments more common to the south in the Great Basin. On the most saline, seasonally flooded sites, black greasewood is dominant, and winterfat is usually associated with droughty soils with high carbonate content on alluvial fans and toeslopes. Sites with better drainage support a variety of shrubs and several holphytes (salt tolerant plants) such as shadscale, hopsage, budsage, rabbitbrush, and grasses such as saltgrass, bottlebrush squirreltail, and Great Basin wildrye. Salt desert scrub is surrounded by big sagebrush or sagebrush steppe cover types. The most extensive areas are always associated with the large, ephemeral lakes of the region. However, there are numerous small pockets of this cover type scattered sporadically throughout southeastern Oregon (Anderson 1998; Kagan and Caicco 1996).

Lava land/sand dunes (vegetated): There are large expanses of barren lava fields with occasional isolated patches of tall shrub communities where Wyoming and basin big sagebrush predominate and low shrub communities may also occur. These include barren, recent lava flows with no vegetation, lava flows with big sagebrush inclusions, and flows which have recently been invaded by vegetation. Bluebunch wheatgrass, Sandberg's bluegrass, needlegrass, Idaho fescue, and junegrass occur in soil pockets in these flows. However, bare lava characterizes large areas of this type. While big sagebrush is the principal dominant plant, low sagebrush is also common at certain sites. The two rabbitbrushes are also associates. Other shrubs found in these are currants, bitterbrush, and desert-sweet. The vegetated sand dunes have a variety of grasses, especially Indian ricegrass, creeping wildrye, and Great Basin wildrye, while only a few shrubs survive on the dune systems. They are found to be within the salt desert shrub community list.

Unvegetated ground: These areas can be wetland playas that are seasonally wet and dry, bare rock areas, open water, recent burns, lava fields, and areas where no data is available.

Modified grassland—crested wheatgrass and cheatgrass: Extensive grasslands in southeastern Oregon that formerly were composed of native bunchgrasses have today been planted with crested wheatgrass seedings or have been invaded by cheatgrass. Both of these species originated in Eurasia but have adapted to this climate and soil. Cheatgrass, an annual, was inadvertently introduced in America with cattle and in hay used for balast in ships; it can outcompete the native grasses by germinating in the fall. Presently, these grasslands are used primarily for grazing but provide little forage value. Weedy native and exotic annual forbs may also be present or even dominant. These large expanses of cheatgrass can be the result of hot fires, unsuccessful seedings, historic overgrazing, abandoned farming, and other disturbances. Weedy forbs, such as mustard, cranesbill, knapweeds, tumbleweed, horned buttercup, and thistle are common in these areas.

In the past, many acres were planted with crested wheatgrass after wildland fires. These communities remain a dominant crested wheatgrass community for about 10 years, when sagebrush and rabbitbrush invade. Forbs commonly found in this type of communtity include yarrow, milkvetch, arrowleaf balsamroot, spreading phlox, salsify, and mullein. This type is often restricted to foothill margins and gentle terrain in close proximity to valley bottoms, while the

undisturbed remnants of this type are dominated by native perennials. Green and gray rabbitbrush often are common. Sagebrush also occurs locally when the seedings have aged.

Riparian Vegetation

Introduction

Riparian vegetation is dependent on the stream channel type, duration of water availability, soil type and depth, climate, and management history. Sedges, rushes, and in some cases, willow and alder, dominate streams with deeper soils and longer-lasting water. Boulder-dominated streams will have pockets of vegetation that may be grass- and shrub-dominated. As water availability decreases, herbaceous vegetation will shift from sedges to grasses. The grasses will change from wetland obligates—plants that occur almost always in wetlands under natural conditions, to wetland facultative—plants that usually occur in wetlands but occasionally found in nonwetlands. Lower elevation sites often have alder and dogwood along with willow as the predominant woody vegetation. Higher sites are dominated by willow. There are several species of willow in the resource area, some more dependent on moisture than others. For example, scouler willow can survive dry, upland sites, while sandbar willow requires wet conditions. Presence of these species can assist in determination of stream-site condition related to potential. Canyon-confined streams in lower reaches of the area often have ponderosa pine as a dominant structural feature. Juniper has invaded many riparian sites and quaking aspen stands and has replaced more desirable riparian species that are able to better support riparian function.

The role vegetation plays in stream condition (bank stability, sediment capture, flood-flow attenuation, and source of woody debris, etc.) depends on channel type. Channel types E3-6, C3-6 and G3-6 (Rosgen 1996) depend on vegetation to control stream function. The type of vegetation is also critical. Larger sedges have more extensive soil-holding ability than grasses like Kentucky bluegrass. Large woody debris such as tree trunks or boulders may supply the bank-forming structure on streams (other than the vegetation-dependent ones).

Structure and type of vegetation is critical to wildlife and fish, even when it does not control stream morphology, condition, or function. Hardwoods, such as quaking aspen, some taller willows, and cottonwood, supply vertical structure for neotropical birds. As the trees age and decay, cavity nesters make use of them. Vegetation also supplies shade to the stream and helps to cool the water. Leaves from hardwoods supply nutrients to the riparian and aquatic system. In some areas, these leaves can be the driving force as a food source for aquatic macroinvertebrates, which in turn become a food source for fish.

Cottonwood deserves special consideration when managing riparian vegetation. Many cottonwood stands have declined in the area. Remnant stands can be found that have little or no regeneration, while some stands can be identified only by the remaining dead and down trees. Cottonwood trees need flood events so that a silt bed is developed for the seeds to establish themselves. Normal water levels do not present the conditions needed for seedling establishment. After establishment, the seedlings must be protected from grazing in order to survive.

Riparian vegetation communities are more diverse than the surrounding upland areas and thus support a wider variety of wildlife species. This is especially true when considering the amount of habitat edge between the riparian area and upland vegetation. The habitat islands provided by springs are of special significance, because they often provide the only habitat diversity in uniform desert systems.

Grazing Management in Riparian Vegetation

Livestock use in riparian areas in the planning area is controlled so that grazing does not negatively affect the establishment or regrowth of vegetation. By allowing early season grazing (winter/spring) and then removing the stock, managers ensure that the vegetation has enough soil moisture to regrow, so that by the end of the growing season, adequate cover will be on the banks to protect them from flooding. If the vegetation that supports riparian function is removed too late in the year, subsequent high flow events may erode stream banks. Late season grazing often leads to heavy browsing of willows and other hardwoods, as grazing shifts from the drying herbaceous to the remaining green, woody vegetation. As the herbaceous vegetation cures, protein levels drop and the woody material becomes relatively more nutritious. If late season grazing is permitted, use levels on woody and herbaceous vegetation must be limited.

Proper Functioning Condition

In 1991, in response to growing concern over the integrity of ecological processes in many riparian and

wetland areas, the BLM Director approved the "Riparian-Wetland Initiative for the 1990s," establishing national goals and objectives for managing riparian/wetland resources on BLM-administered land. The initiative's goals were to restore and maintain existing riparian/wetland areas so that 75 percent or more are in proper functioning condition by 1997 and to provide the widest variety of habitat diversity for wildlife, fish, and watershed protection. Subsequently, the BLM established a definition for proper functioning condition and a methodology for its assessment. The BLM has adopted proper functioning condition assessment as a standard for evaluating riparian areas and will use it to supplement existing stream channel and riparian evaluations and assessments.

The functioning condition of riparian and wetland areas is a result of the interaction of geology, soil, water, and vegetation (USDI 1993). Proper functioning condition can be defined separately for lotic and lentic waters, as follows:

Lotic waters: (running water systems, 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 waterflows, thereby reducing erosion and improving water quality;
- filter sediment, capture bedload, and aid floodplain development;
- improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks 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 systems, 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 floodplain 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, waterfowl 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 floodplain, is an indicator of nonfunctional condition. However, some elements may not be needed for a stream to function. For example, a bedrock-controlled or boulder-controlled stream would not need vegetation in order to meet the definition of proper functioning condition. Also, since there is no way to improve floodwater retention in these two types of streams, it would not have to meet the third component—"Improve floodwater retention and groundwater recharge"—in order to be in proper functioning 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 interaction of 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 the unique attributes of individual riparian areas, site-specific and onsite assessments are necessary.

Riparian/wetland areas will function properly long before they achieve an advanced ecological status. The range between proper functioning condition and an area's biological potential then becomes the "decision space" for social, economic, and other resource considerations. Until proper functioning condition is attained, management priorities and options focus on reaching this threshold. Areas that meet proper functioning condition will be managed to assure a continuation of this condition.

In 1996 and 1997, a team of specialists inventoried 113 miles of stream on the LRA using the "Process for Assessing Proper Functioning Condition" (BLM Technical Reference 1737-9, 1993). The members included specialists in the fields of hydrology, fisheries, range, botany, and wildlife. Streams were divided into reaches according to their structural and vegetative characteristics, based on management and channel type. Each reach was rated as proper functioning condition, functional-at-risk, or nonfunctional. The trend of the functional-at-risk category was also rated. Ephemeral (streams that flow only in direct response to precipitation and whose channel is above the water table at all times) reaches of streams were not rated. The percentage of intermittent/ephemeral portions of reaches were rated for the intermittent reaches only. Table 2-3 summarizes the results of this survey, indicating the miles of each rating and that rating's percent compared to the total miles rated. Table 2-4 shows functional condition of streams in the planning area. While conducting the field inspections, the team noted management change options or projects that would benefit the streams. Table 2-5 summarizes existing management, miles, and recommended changes, where made, on the functional-at-risk and nonfunctional rated reaches.

The Fremont National Forest has also used the proper functioning condition methodology on some of their streams. In the Deep Creek Watershed, which drains into the Warner Lakes Subbasin, they rated 23 segments as proper functioning condition and 17 as functional-at-risk with an upward trend. In the Chewaucan Watershed, which drains into Lake Abert, 10 segments were rated as proper functioning condition and 3 were rated as functional-at-risk with an upward trend.

Starting in 2000 and continuing in 2001, a riparian score card is being developed that assesses the current interaction of soils, vegetation, and stream channel. These cards will be used to compare current conditions to potential conditions for that site. In the future, once the cards are completed, this information will be used to describe desired range of conditions on each site.

Wetlands Vegetation

The large number of closed basins that typify the High Desert Province include dry lakebeds, lakebeds that are inundated infrequently and for short periods, perpetual lakes that fluctuate in size over time, and wetlands and marshes that are reasonably perpetual. Vegetation on these bottomlands varies according to the frequency, depth, and duration of inundation. Probably the most significant and valuable wetlands in the High Desert Province, from a total ecosystem viewpoint, are those associated with isolated springs and streams scattered over the arid landscape. The variety of shrubs, grasses, and forbs present depends on the degree and duration of wetness and shade at each location (Williams 1998).

Included in these plant communities are the willow floodplain riparian areas, where tall shrub communities with dense willow cover are occasionally interspersed with wetlands, sedge meadows, or moist, forb-rich grassland. This community occurs in broad valley floors as well as narrow riparian canyons along rivers and streams. Many rivers usually have some cottonwood, several willow species, wormwood, gooseberry, rose, snowberry, red-osier dogwood, serviceberry, alder, and some pine and *Prunus* species. Alder is rare on the BLM portion of the RMP area. At one time, cottonwood was probably more prevalent; at present it does not occur widely in Lake County (Anderson 1998). Stinging nettle, cow parsnip, and *Rubus* species are often present.

Hardstem bulrush-cattail marshes form open to dense, nearly monotypic (solitary) stands of bulrush where standing water is found throughout much of the growing season. Patches of cattail, burreed, and several species of *Scirpus* are the most important graminoids. *Carex* species occur in and around this type, along with *Eleocharis* and *Juncus* species. In some areas, spike rush forms a monotypic community along wetland channels.

Table 2-3.—*Summary of stream condition in the planning area*

Proper functioning condition (miles/%)	Functional-at-risk Trend: Up	Functional-at-risk Trend: Down	Functional-at-risk Trend: Not apparent	Nonfunctional
85.48	13.3	0.5	6.65	7.35
75%	12%	0%	6%	7%

Sedge montane meadows and wetlands are scattered throughout the area with tall sedge meadows and wetlands, with dense, rhizomatous, or tufted sedges dominating the meadows. Usually these areas are low in forb production. Tufted hairgrass is the most common grass, occurring at the drier margins. The forbs often present are *Potentilla, Geum, Lupinus,* and *Lomatium* species and occasionaly blue camas and *Perideridium* species. *Salix* species dominate streams that run though these meadows.

Tufted hairgrass montane meadows and valley prairie occur on a few sites of the planning area. These tall montane meadow grasslands with dense, tufted grasses range from forb-rich to grass-sedge dominated areas. Occasionally, willows, silver sagebrush, and black greasewood can be found: . Tufted hairgrass is usually the dominant species. In some areas, Nevada bluegrass or Cusick's bluegrass are entirely dominant. *Carex* and *Juncus* species are codominant in wetter margins.

Forest and Woodland

Types, Locations, and Acreage

Map V-1 shows the current LRA vegetation classes, based mainly on GAP 1 satellite imagery. Table 2-6 is derived from this map and shows acreage by forest vegetation classes.

Commercial forest lands in the LRA total 15,331 acres, and are typically low-elevation ponderosa pine located just below national forest lands. Most are relatively small and remote tracts. The two most extensive commercial stands are the isolated stands at Lost Forest (4,153 acres) and Colvin Timbers (591 acres). Since Lost Forest was designated an RNA in 1973, commercial pine forests in that area are not available for timber harvest or development treatments. The remaining 10,587 acres of commercial forest are widely scattered and have a relatively low stand volume. Management on a sustained-yield basis would not be feasible. Instead, these lands have been designated a protection area in the present plan, which allows management treatments but does not require an allowable sale quantity.

Below the commercial forest lands is the drier desert landscape. Precipitation is not sufficient to support ponderosa pine but is adequate for western juniper in many areas. Periodic natural fires, which previously prevented wide-scale juniper establishment, have been absent for over a century. This has allowed juniper to spread from less fire-prone sites to sagebrush and riparian communities. The majority of today's juniper stands are composed of such "invasive" trees. Juniper has also invaded the dry fringes of pine stands, where it competes vigorously with the pine.

Invasive juniper has been considered more of a pest than a resource. Juniper's heavy use of soil moisture allows it to aggressively compete with forage species used by deer, pronghorn, and domestic livestock. Watersheds themselves can be degraded by juniper through ground cover reduction and subsequent surface erosion. Treatments of juniper stands have been made, not to enhance the juniper woodland, but to release or establish native grasses and shrubs and improve forage. The juniper cuttings above Buck Creek on deer winter range are an example.

Western juniper woodlands now cover 215,052 acres, which is nearly 7 percent of the LRA (Map V-2). Large expanses of juniper woodlands are found in northern Lake County from the Fort Rock/Christmas Valley area to Frederick Butte and Wagontire Mountain. Other extensive areas of juniper are in the hills west of Warner Valley and on Juniper Mountain.

Table 2-7 shows the yearly sales of fuelwood, boughs, and fence posts from 1986 to 1998. In general, fuelwood and bough sales have increased in the last 5 years, but, in relation to the resource, there is an opportunity to greatly increase future demand for commercial harvest on juniper woodlands. There could also be a large regional demand for the salvage and utilization of biomass leftover from stand treatments for the generation of electrical energy.

Table 2-4.—*Functional condition of streams in the planning area (miles of streams)*

Stream Name	Proper functioning condition	Functional-at-risk			Nonfunctional	Not rated
		Up	Down	Not apparent		
Deep Creek	8.05	0.75			0.35	0.35
Parsnip	2.03	0.65				
Drake	4.35	0.55		0.85		
Drake Tributary	0.75					
Camas	1.25	2.30		0.40		
Twentymile	4.30	0.30		0.20		
Twelvemile	3.70	1.05			3.55	
Fifteenmile	5.45	1.45				
Horse	1.55	2.25				
Horse Tributary	1.00					
Honey	5.40					
Snyder	1.75					
Twelvemile	2.60					
Clover	4.40					
Colvin						4.50
Fish	7.90			1.30		
Chewaucan	4.15					
Mill	1.50			1.00	0.25	
Willow	0.60	1.15			0.90	
Moss	0.70	0.40				
Dicks	0.30					
Pine					0.30	
Loveless						0.25
Silver	1.55					
West Fork Silver	1.55	0.55				
Buck	4.00					
Bridge	1.55	0.30			0.25	
Duncan	2.60					
Bridge Creek Draw		0.25				
Crane	0.25					
Kelly	1.20					
Anna River	0.50					
Warlow	2.25					
Guano	6.10			2.90	2.25	
Sagehen	2.20	1.40				
East/West Gulch			0.50			
Total miles rated/(%)	85.48 (75)	13.30 (12)	0.50 (0)	6.65 (6)	7.35 (7)	5.10

Table 2-5.—*Management on streams not at proper functioning condition*

Existing/recommended livestock management	Stream rating (miles)			
	Functional-at-risk			
	Trend up	Trend not apparent	Nonfunctional	Total
Presently excluded from grazing	2.50	0.00	4.00	6.50
Presently managed for grazing	7.80	0.85	0.35	9.00
Recommend exclusion from grazing	0.80	0.00	0.70	1.55
Recommend management change	1.40	3.65	2.75	7.80
Monitor	0.80	2.35	0.25	3.45

Table 2-6.—*Current forest vegetation classes on BLM-administered lands in the Lakeview Resource Area* [1]

Forest vegetation class	Acres
Ponderosa pine [2]	14,076
Mixed conifer	1,255
Western juniper	215,052
Quaking aspen [3]	2,063
Total	232,446

[1] Source is GAP 1 satellite classification, July 1988, unless otherwise noted.
[2] Source is Lakeview BLM forest inventory.
[3] Since minimum resolution is 30 meters x 30 meters and minimum map unit size is only 320 acres, quaking aspen stands, which are typically smaller than this, are assumed to be underestimated here.

Table 2-7.—*Sales of vegetative products in the Lakeview Resource Area, 1986–1998* [1]

	Fuelwood			Boughs			Fence posts		
Year	Permits	Cords	Value ($)	Permits	Tons	Value ($)	Permits	Posts	Value ($)
1986	3	18	49	3	7.0	980	3	1,200	240
1987	4	33	115	3	2.3	322	1	250	50
1988	6	20	76	3	22.0	1,320	3	350	90
1989	1	3	9						
1990	5	51	363	1	2.0	121	1	70	21
1991	6	24	96	1	14.0	1,350	1	200	60
1992	5	11	44	2	4.0	399	2	150	55
1993	5	46	334	2	3.0	260			
1994	15	59	361	3	28.0	2,799	5	324	140
1995	24	80	317	6	14.0	1,420	3	175	80
1996	9	26	408	1	1.0	100	1	43	24
1997	17	60	265	2	0.5	50	5	277	145
1998	17	57	348	1	1.0	10			

[1] Not shown above are three small sales for corral poles, and two timber trespass settlements.

Conditions and Trends

Forested lands in the LRA have been studied as part of the Interior Columbia Basin Ecosystem Management Project (ICBEMP). This project assessed forest conditions and trends on a region-wide basis, as well as smaller portions of the regional study area. The more localized areas were designated as ecological reporting units. Most conditions and trends of the Northern Great Basin Ecological Reporting Unit also apply to the LRA.

Table 2-8 summarizes current forest and woodland conditions and trends for the entire Upper Columbia River Basin Project Area, for the Northern Great Basin Ecological Reporting Unit, and for the four subbasins that contain the LRA. Appendix Q discusses the health of forests and woodlands in the four subbasins.

Special Status Plant Species

Section 68.40 of the BLM Manual sets the guidelines for special status plant species (Bureau-sensitive plant species). These selected species receive priority attention for inventories, research, monitoring, and for management decisions regarding land-disturbing activities. Consultation with Federal, state, and non-governmental agencies help direct the plants' protection and management. Challenge Cost Share projects between government and nongovernment partners have provided studies and monitoring on several of these species. The BLM performs special status plant surveys before any land exchanges, range and wildlife projects, other surface-disturbing activities, or proposed mining operations take place.

A conservation agreement with the USFWS is in effect in the LRA for Columbia cress, and the species is monitored to prevent its extirpation. Conservation agreements are being written with the USFWS for Cusick's buckwheat, snowline cymopterus, Crosby's buckwheat, and grimy ivesia. Monitoring is being done on these and other populations of interest.

Federal regulations, state laws, and BLM policy mandates the following actions:

- Maintain and improve critical or essential habitat to prevent deterioration and provide recovery (see Table 2-9 for current T&E species).
- Maintain, restore, or enhance the habitat of candidate, state-listed, and other sensitive species to maintain the populations at a level which will avoid endangering the species and the need to list the species by either state or Federal governments (see Table 2-9).
- Ensure that BLM-authorized actions within the LRA do not result in the need to list special status species or jeopardize the continued existence of listed species.
- Increase BLM's knowledge about the status and distribution of special status species.

Special status plant species occur in a variety of plant associations and on a variety of physical habitats, many of which have distinctive soil types. Often, several special status species occur together. In conservation agreements, these are treated as a "plant community." In the planning process for ICBEMP, Vander Schaff (personal communication) suggested that the various volcanic ash substrates found in southeastern Oregon have promoted a high degree of plant endemism, that is, a large number of plant species that are found only in certain sites or areas. Numerous species and subspecies have arisen that can occupy these often harsh ash sites.

Noxious Weeds and Competing Undesirable Vegetation

Introduction

In Oregon, as well as in other western states, noxious weeds are so thoroughly established and spreading so rapidly that they have been declared a menace to public welfare (Oregon Revises Statutes 570.505). Noxious weed invasion contributes to the loss of rangeland productivity, increased soil erosion, reduced species and structural diversity, loss of wildlife habitat, and in some instances, is hazardous to human health and welfare, as emphasized in the "Federal Noxious Weed Act" (Public Law 93-629). Some weed species pose a significant threat to multiple use public land management.

Noxious weeds cannot be adequately controlled unless Federal, state, county, and private interests work together. The "Carlson-Foley Act" (Public Law 90-583), as well as state and county laws, make the Federal government responsible for control of weeds on Federal land and provides direction for their control. The Lakeview District operates under the weed proto-

Table 2-8.—*Summary of forest and woodland conditions and trends*

Condition or trend	Interior Columbia River Basin-wide scale	Northern Great Basin Ecological Reporting Unit scale	Planning area scale
Successional trend to multi-layer forests	Historically late-seral communities experienced periodic fires that maintained open, park-like stands of large shade-intolerant trees with low susceptibility to mortality from stress, fire, insects, or disease. Basin-wide, both timber harvest of larger trees and fire exclusions have converted many of the late-seral communities to mid-seral communities. The late-seral multi-layer forests now occur on dry slopes (PNW-GTR-385, p. 80 & 83, and PNW-GTR-405, p. 487). The communities are denser, and have higher mortality, higher fuel loadings, and higher susceptibility to crown fire than historical communities (PNW-GTR-405, p. 477). In addition, on USFS lands, timber harvest patch size has been limited by law. The more scattered location of smaller patches has led to the fragmentation of forest landscapes (PNW-GTR-385, p. 76).	In contrast to basin-wide trends, the late-seral forest communities increased from 5 percent to 7 percent of the area of the Northern Great Basin Ecological Reporting Unit. This net increase was dominated by a significant increase in late-seral multi-layer forest types (PNW-GTR-405, pp. 714-718).	Conditions and trends identified at the basin and ecological reporting unit scale apply. The increase in multi-layer stands is the result of encroachment by western juniper at the edges of ponderosa pine stands, and a large increase in pine and white fir understory area and density. Timber harvest has resulted in the removal of nearly all old growth pine from most private and many USFS forest stands. The increased number of understory trees has resulted in overstocking of many forest sites, with attendant insect and disease problems (mountain pine beetle and western pine beetle in ponderosa pine, fir engraver in white fir, and dwarf mistletoe in both), and the increase in ladder fuels. Local forests are now more vulnerable to large-scale, stand-replacing disturbances like epidemic-level insect attack and catastrophic wildland fire.
Increase in severity of successional disturbance regimes	Traditional forestry and exclusion of fire have changed successional disturbance regimes and vegetative composition and structure. The change in disturbance regimes is toward longer intervals between more severe disturbances (PNW-GTR-385, p. 92) In the dry forest vegetation group, lethal (stand-replacing) fires have increased substantially (GTR-PNW-385, p. 87, and GTR-PNW-405, pp. 855-873).	Same as Upper Columbia River Basin-wide scale.	As described above, forests have increased in density, resulting in overstocking on many sites. This has resulted in stressed stands more vulnerable to insect and disease attack, as well as a much higher fire hazard due to increased fuel loads and development of ladder fuels. Resiliency (positive response to disturbance events) of local forests has been reduced.

Condition or trend	Interior Columbia River Basin-wide scale	Northern Great Basin Ecological Reporting Unit scale	Planning area scale
Decrease in vegetative diversity	Fire exclusion, proliferation of exotic plants, and heavy grazing during the growing season has brought about a decrease in vegetative diversity . This has caused a decline in vegetative communities that were historically dominated by ponderosa pine, quaking aspen, and cottonwood (PNW-GTR-385, p. 83).	For the Northern Great Basin Ecological Reporting Unit, the area of the interior ponderosa pine cover type decreased 14.57 percent from its historical area (1850–1900), but this change is within its historical range of variability. The lodgepole pine type decreased 10.84 percent from its historical area, but this is also within its historical range of variability (PNW-GTR-405, p. 687).	Extensive areas of older lodgepole pine stands in the northwest portion of Lake County experienced considerable mortality from mountain pine beetle attack in the 1970s and 1980s. Many of these stands were salvage-logged, and older lodgepole stands vulnerable to attack were also logged. These logged over stands have normally been replanted to lodgepole pine, so the overall cover type change is minor. However, these stands have shifted in age class from late to early-seral. Noxious weeds are a growing problem, especially in the dry ponderosa pine types. Quaking aspen and cottonwood in riparian areas have significantly decreased within the last 50 years.
Rapid expansion of the western juniper cover type	The upland woodland type has substantially expanded, due largely to exclusion of fire (PNW-GTR-385, p. 82). Past heavy grazing also reduced fine fuels that previously carried fires under natural conditions.	The juniper/sagebrush cover type has increased nearly four-fold over its historical area. This is an ecologically significant change, which means this type is considerably outside its historic range of variability (PNW-GTR-405, pp. 684-685, 687, and 773-783).	The nearly fourfold increase in areal extent of the western juniper/sagebrush type should also apply directly to the planning area. Ecosite inventory identifies juniper sites (usually the old growth sites on rocky ridges or other fire-protected areas), and "invasive juniper" juniper occurring on naturally "nonjuniper" sites. Ecosite inventory work has been completed for the Prineville and Burns BLM Districts, and will be completed for the LRA in 2001. The combined results of these ecosite inventories will provide current information on the area covered by this growing vegetation cover type.

Source: General Technical Report PNW-GTR-385, Nov. 1996, "Status of the Interior Basin, Summary of Scientific Findings," and General Technical Report PNW-GTR-405, June 1997, "An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath Great Basins."

cols set forth in the following documents: "Vegetation Treatment on BLM Lands in Thirteen Western States Final Environmental Impact Statement and Record of Decision" (1991), "Supplement to the Northwest Area Noxious Weed Control Program Final Environmental Impact Statement and Record of Decision" (1987), and the "Integrated Noxious Weed Control Program Environmental Assessment" (#OR-013-93-03) (1994).

The Oregon Department of Agriculture (ODA) has developed a classification system to provide guidelines for implementing and prioritizing noxious weed control programs, to assist in the distribution of limited funds, and to serve as a model for other weed classification systems (ODA 1997). This system defines three classes of noxious weed species: (1) weeds that pose a known economic threat and occur in infestations small enough to make eradication or containment possible; (2) weeds that pose an economic threat and whose regional abundance limits control techniques primarily to biological methods; and (3) weeds for which the ODA will implement a statewide management plan.

Table 2-9.—*Documented Bureau sensitive plant species in the Lakeview Resource Area (ONHP 1998)*

Latin name	Common name	Status [1]
Agastache cusickii	Cusick's giant-hyssop	2 ONHP
Allium bisceptrum	Patis onion	4 ONHP
Allium lemmonii	Lemmon's onion	4 ONHP [2]
Astragalus tegetariodes	Bastard kentrophyta	1 ONHP [2]
Astragalus tetrapterus	Four-winged milkvetch	4 ONHP [2]
Caulanthus crassicaulis	Thickstemmed wild cabbage	4 ONHP
Chaenactis xantiana	Desert chaenactis	1 ONHP
Cymopterus nivalis	Snowline cymopterus	2 ONHP [2]
Eriogonum crosbyae	Crosby's buckwheat	1 ONHP [2]
Eriogonum cusickii	Cusick's buckwheat	1 ONHP [2]
Eriogonum prociduum	Prostrate buckwheat	1 ONHP [2]
Galium serpenticum var. *warnerens*	Warner Mountain bedstraw	1 ONHP [2]
Gratiola heterosepala	Boggs Lake hedge-hysop	1 ONHP
Hymenoxys cooperi var. *canescens*	Copper's goldflower	2 ONHP
Ivesia rhypara var. *rhypara*	Grimy ivesia	1 ONHP/2 Federal [2]
Ivesia rhypara var. *shellyi*	Shelly's ivesia	1 ONHP [2]
Melica stricta	Nodding melic grass	4 ONHP
Mimulus evanescens	Disappearing monkeyflower	1 ONHP
Mimulus latidens	Broad-toothed monkeyflower	2 ONHP
Mimulus tricolor	Three color monkeyflower	2 ONHP
Pedicularis centranthera	Dwarf lousewort	4 ONHP [2]
Plagiobothyrus salsus	Desert allocarya	2 ONHP [3]
Pleuropogon oregonus	Oregon semaphore grass	1 ONHP [3]
Sesuvium verrucosum	Verrucose sea-purslane	2 ONHP
Symphoricarpos longiflorus	Long-flowered snowflower	2 ONHP

[1] Indicates placement on ONHP lists: List 1—threatened with extinction or presumed to be extinct; List 2—threatened with extirpation or presumed to be extirpated from Oregon; List 3—may be threatened or endangered in Oregon or throughout range, but more information is needed to determine status; List 4—not currently threatened or endangered but of conservation concern.
[2] Ash or pumice physical habitat.
[3] Found only on private land at this date; plants to be part of RMP planning.

Noxious plants are present throughout the planning area (Table 2-10). The weed control program is dynamic as a result of the influx of new weed introduction and the ongoing implementation of varied control methods. Grazing and fire management, as well as chemical, mechanical, and biological control methods are used as part of an integrated weed management program. These methods are subject to site-specific determination of appropriate techniques. The BLM monitors, on an annual basis, the changes in distribution and new introductions of noxious weeds.

Warner Basin Weed Management Area

The Warner Watershed is a 500,000-acre basin ringed by forest, rim rock, and rangeland. The bottom of the basin contains private hay meadows and the 51,000-acre federally protected Warner Wetland ACEC. Included in the Warner Basin Weed Management Area are lands within the jurisdictions of the U.S. Forest Service (USFS), BLM, USFWS, Oregon Division of State Lands (ODSL), and numerous private organizations and individuals. Land ownership in the watershed is approximately one-third private, one-third BLM, and one-third other public agencies.

In 1998, the Warner Basin Working Group, comprised of representatives from public and private lands, was formed to develop a management plan for the watershed that would employ integrated weed management techniques. The working group developed the follow-

ing three goals:

1) Coordinate management and inventory of weeds on all land ownerships within the 500,000-acre Warner Basin Watershed.

2) Protect all land resources from the threat of noxious weed invasion in the Warner Watershed.

3) Educate resource users and the general public about noxious weed identification, ways that weeds spread, and the means to control those weeds.

The Warner Basin Working Group categorized target weed species into three groups (Table 2-11):

1) High priority species, upon which control efforts will continue or be initiated;

2) New invaders, which will move to the top of the priority list for eradication if discovered in the Warner Basin; and

3) Other species of concern, which are relatively widespread but are not perceived to be as threatening to the resource values of the Warner Basin as plants in the first two groups.

Soils

Introduction

Soils in southcentral Oregon are semiarid, very young, and poorly-developed. Chemical and biological soil development processes, such as rock weathering, decomposition of plant materials, accumulation of organic matter, and nutrient cycling proceed slowly in this environment. Soil recovery processes are also slow; therefore, disruption of soil can lead to long-term changes in ecology and productivity. In many areas, natural or geologic erosion rates are too fast to develop distinct, deep soil horizons. The soils in the LRA are complex and diverse.

Soil data is available from the soil surveys mapping southern Lake and Harney Counties. This information, on file at the LRA office, contains soil series descriptions, mapping unit descriptions, interpretations, and detailed soils maps. Major soil mapping units of the southern planning area are discussed in Appendix C1.

Soils in the northern Lake County portion of the resource area are currently being mapped by the BLM/ Natural Resource Conservation Service (NRCS) ecological site inventory crew out of Burns, Oregon. The inventory procedure is described in Appendix C2.

Soil Erosion

In the semiarid areas of the planning area, bare soil between plants is 10 to 20 percent of the total ground cover of a native plant community; therefore, the soil erodes naturally. In addition to this background erosion rate, management regimes affect the rate at which soil is eroded from a landscape. Any activities that remove vegetative cover increase the erosion rate. Some soils (for example, shallow soils over bedrock) are particularly vulnerable to soil erosion. If the surface layers of these soils are washed or blown away, the productivity potential is lost for a geologic time span.

Soil Management and Productivity

Current management practices, such as proper stocking rates for livestock, rotation grazing, periodic rest from grazing, improved road design, selective logging, rehabilitation of unneeded surface disturbance, restricting vehicles to roads and trails, rehabilitating mined areas, and control of concentrated recreational activities, have reduced erosion effects and improved soil conditions.

Management practices may affect soils' ability to maintain productivity by influencing disturbances such as displacement, compaction, erosion, and alteration of organic matter and soil organisms levels. When soil degradation occurs in semiarid, high desert regions, natural processes are slow to return site productivity. Prevention of soil degradation is far more cost-effective and time-effective than remediation or waiting for natural processes.

Soil productivity varies widely due to characteristics such as soil depth, nutrient status, available water-holding capacity, and site characteristics including elevation, aspect, and slope gradient. The most productive soils for forage or wood fiber are found in valley bottoms, toeslopes, benches, and broad ridgetops. Demands for maintaining a productive ecosystem create a need for maintaining long-term soil productivity. Current soil productivity reflects site-specific natural conditions and past management practices.

Historically, erosion occurred on upland soils and in drainage channels as a result of uncontrolled land use, prolonged drought, and catastrophic storms. Many

Table 2-10.—*Noxious weeds present in the planning area*

Common name	Scientific name
Bull thistle	*Cirsium vulgare*
Canada thistle	*Cirsium arvense*
Dalmation toadflax	*Linaria dalmatica*
Diffuse knapweed	*Centaurea diffusa*
Dyers woad	*Isatis tinctoria*
Field bindweed	*Convolvulus arvensis*
Halogeton	*Halogeton glomeratus*
Hoary cress	*Cardaria* spp.
Mediterranean sage	*Salvia aethiopis*
Medusahead rye	*Taeniatherum caput-medusae*
Musk thistle	*Carduus nutans*
Perennial pepperweed	*Lepidium latifolium*
Poison hemlock	*Conium maculatum*
Russian knapweed	*Acroptilon repens*
Scotch thistle	*Onopordum acanthium*
Spiny cocklebur	*Xanthium spinosa*
Spotted knapweed	*Centaurea biebersteinni*
St. Johnswort	*Hypericum perforatum*
Yellow starthistle	*Centaurea solstitialis*
Yellow taodflax	*Linaria vulgaris*

drainages were deeply incised by gully erosion more than 30 years ago. Some geologic erosion and localized erosion caused by concentrated uses still occurs.

Soil bulk density (mass per unit volume), porosity (hydraulic conductivity), organic matter content, moisture content, nutrient content, and soil temperature are affected to various degrees by surface management actions. In turn, these factors affect soil-water interactions, productivity, nutrient cycling, water holding capacity, and soil erosion rates.

Soil compaction may result from concentrated activities such as equipment operation, livestock grazing, and pedestrian traffic. Compaction can reduce water infiltration rates, resulting in less available moisture for plants and increased surface runoff and root restrictions. These factors may contribute to reduced site productivity, increased soil erosion rates, and water quality degradation.

Microbiotic Crusts

Microbiotic crusts consist of lichens, mosses, green algae, fungi, cyanobacteria, and bacteria growing on or just below the soil surface in a thin layer. Found in spaces between larger plants, these crusts play a role in controlling soil erosion, filtering water, retaining soil moisture, and improving soil fertility by fixing atmospheric nitrogen and contributing soil organic matter. In some instances, the crusts appear to improve plant seeding establishment. Microbiotic crusts are extremely sensitive to air pollution and have been used as a parameter to measure the effects of air pollution in protected areas such as wilderness areas and national parks. According to research by Ponzetti (2000) in the northern Great Basin, "Biotic soil crusts show promise as indicators of rangeland health, and are increasingly being recognized as important components of arid and semiarid communities. Rangeland health is defined as the degree to which the integrity of the soil, vegetation, water, air, and ecological processes of rangeland ecosystems are sustained. Biotic crusts improve the sustainability of rangeland ecosystems by increasing soil stability and contributing to nutrient cycles. They appear to limit germination of cheatgrass, an invasive exotic annual grass. Biotic crusts in the arid and semiarid West do not appear to limit vascular plant cover; greater crust cover often accompanies greater plant cover, or is unrelated to plant cover. Bare ground

Table 2-11.—*Warner Basin Working Group weed species categories*

Common name	Scientific name
High priority species	
Hoary cress	*Cardaria* spp.
Perennial pepperweed	*Lepidium latifolium*
Russian knapweed	*Acroptilon repens*
New invaders	
Dyers woad	*Isatis tinctoria*
Leafy spurge	*Euphorbia esula*
Medusahead rye	*Taeniatherum caput-medusae*
Purple loosestrife	*Lythrum salicaria*
Tamarisk	*Tamarix* spp.
Yellow starthistle	*Centaurea solstitialis*
Other species of concern	
Bull thistle	*Cirsium vulgare*
Canada thistle	*Cirsium arvense*
Common cocklebur [1]	*Xanthium strumarium*
Halogeton	*Halogeton glomeratus*
Mediterranean sage	*Salvia aethiopis*
Poison hemlock	*Conium maculatum*
Scotch thistle	*Onopordum acanthium*
Spiny cocklebur	*Xanthium spinosa*
Spotted knapweed	*Centaurea biebersteinni*
Western waterhemlock [1]	*Circuta douglasii*

[1] Denotes plants that are native and not noxious—these plants are listed by the working group as species of concern because they are poisonous to livestock.

is often inversely related to crust cover, suggesting that a decline in crust cover produces an increase in bare soil, rather than an increase in vascular vegetation. In addition, biotic crusts may serve as an early warning system, since they appear to be more sensitive to disturbance from livestock than vascular plant communities."

In the "National Range and Pasture Handbook," the NRCS identified microbiotic crusts as 1 of 17 rangeland health ecological attributes to be used as an indicator of rangeland health. Crusts are considered important to soil and site stability, watershed and hydrologic cycles, and soil and plant community integrity. The LRA has very little microbiotic crust monitoring or research other than Ponzetti's few plots (2000). This is also true for the northwest section of the Northern Great Basin. Crusts have been collected and curated for the BLM herbarium; some have been identified. The ecological site inventory team was instructed to identify the occurrence of microbiotic crusts in their coverage estimates but not identify to genus or species. Species need to be collected, identified, curated, and mapped. Also, research is needed on the relationship of crusts to rangeland health and the role fire plays in distribution and crust existence.

Water Resources/Watershed Health

Introduction

Regions, subregions, basins, and subbasins are delineated based on protocol defined by the USGS. This system delineates a hierarchy of geographical regions

and their subparts, such as subregion, basin, subbasin, watershed, and subwatershed. Each hydrologic unit is referred to as a field and given a 2-digit numeric identifier. The code, called a hydrologic unit code, is a unique numeric identifier. Table 2-12 shows an example of this hierarchical breakdown.

The LRA is comprised primarily of four subbasins—Summer Lake, Lake Abert, Warner Lakes, and Guano (see Map R-4 and Table 2-13). These subbasins are part of the larger Oregon Closed Basins Subregion and the Pacific Northwest Region. The topographies of these large areas direct surface and some shallow subsurface water to streams, lakes, reservoirs, or playas. These are internally drained subbasins and do not have an outflow like traditional watersheds.

There are two main types of watersheds in the LRA. One is the traditional watershed, which has considerable slope and a network of stream channels that start as ephemeral in the headwaters and gradually are fed more water down slope, transitioning to intermittent, and finally perennial. These watersheds have streams which can support a variety of aquatic species. The other type is the closed basin. These are desert areas where the precipitation infiltrates locally and mainly supports the vegetation on site. Some water does move over land and subsurface to large playas or wetlands. Of the little precipitation received, more is used on site then is delivered downslope.

Subbasins

The Summer Lake Subbasin is more than 2.5 million acres in size. It is bounded by forested mountains on the western edge and desert hills to the north, east, and south. There are 20 fifth field watersheds in the subbasin. Major waterbodies include Summer Lake, Silver Lake, Thompson Reservoir, Ana Reservoir, Duncan Reservoir, ZX Reservoir, and Detention Reservoir. Alkali Lake and North Alkali Lake are low-lying areas seasonally inundated with water. Paulina Marsh is a large wetland that drains into Silver Lake. The lakes in the area are large and shallow, so the shorelines change dramatically with seasonal filling and drying.

The Lake Abert Subbasin is about 650,000 acres in size. It is bounded by Abert Rim to the east, forested mountains to the west and south, and desert hills to the north. The major waterbody is Lake Abert, a large, shallow, saline lake. There are six fifth field watersheds in the subbasin. The Chewaucan River is the largest stream flowing into the lake and has upper and lower marshes associated with it. The Lake Abert Subbasin contains internally drained basins and many seasonally flowing streams.

The Warner Lakes Subbasin is more than one million acres in size. It is bounded by Hart Mountain to the east, Abert Rim and Warner Mountains to the west, desert hills to the north, and forested mountains to the south. There are eight fifth field watersheds in the subbasin. It has many lakes, which form a chain parallel to the Hart Mountain uplifted fault block. These are Crump, Hart, Anderson, Swamp, Flagstaff, Upper Campbell, Campbell, Turpin, Stone Corral, and Bluejoint Lakes. These lakes are associated with extensive wetlands. The major perennial streams flow from the Warner Mountains.

Guano Subbasin is almost two million acres in size. It is bounded by Hart Mountain on the west and desert hills on the north, east, and south. There are 11 fifth field watersheds in the subbasin. It has many seasonal lakes and wetlands. The subbasin has perennial, intermittent, and ephemeral streams but is dominated by streams which flow only seasonally. Guano Creek is a main intermittent stream which drains from Hart Mountain.

Hydrologic Integrity

The ICBEMP scientific assessment determined hydrologic integrity for the subbasins in the Columbia Basin: "A hydrologic system that exhibits high integrity is a network of streams, along with their groundwater ecosystems, within the broader landscape where the upland, floodplain, and riparian areas have resilient vegetation, where capture, storage, and release of water limits the effects of sedimentation and erosion, and where infiltration, percolation, and nutrient cycling provide for diverse and productive aquatic and terrestrial environments . . . hydrologic integrity was estimated based on disturbance sensitivity and recovery potential of watersheds, plus the amount and type of past disturbance. Watersheds with high impact (disturbance) and low recovery potential have higher probabilities of containing altered hydrologic functions than other areas, and are consequently classified as low integrity. Conversely, areas with low relative effect from mining, dams, roads, cropland conversion, and grazing, and which also have high recovery potentials, are considered to have the highest probable hydologic integrity."

The Summer Lake and Abert Lake Subbasins were rated as high forest hydrologic integrity. The Warner

Table 2-12.—*Hierarchy of hydrologic units, Lower Crooked Creek (171200060901)*

Hierarchy term	Hydrologic unit code	Numeric identifier	Name	Size (acres)
Region	First Field	17	Pacific Northwest	165,757,150
Subregion	Second Field	12	Oregon Closed Basins	11,072,000
Riverbasin	Third Field	00	The subregion and river basin are the same, as indicated by the 00.	11,072,000
Subbasin	Fourth Field	06	Lake Abert	652,800
Watershed	Fifth Field	03	Crooked Creek	56,750
Subwatershed	Sixth Field	01	Lower Crooked Creek	26,500

Table 2-13.—*Lakeview Resource Area subbasins and watersheds*

Subbasin	Hydrologic unit code	Total acres	Number of 5th field watersheds
Summer lake	17120005	2,624,000	20
Lake Abert	17120006	652,800	6
Warner Lakes	17120007	1,216,000	8
Guano	17120008	1,900,000	11

Lakes and Guano Subbasins were rated as high range hydrologic integrity (USDI-BLM 1996h). Appendix A2 summarizes the ICBEMP scientific assessment applicable to the planning area.

Streams

The streams in the RMP area originate in the higher elevation hills and mountains, mostly in the adjacent Fremont National Forest (see Table 2-14 for stream characteristics by subbasin). They then flow to the lower elevation valleys, lakes, wetlands, and playas. Most surface runoff is from snowmelt or rainfall at the higher elevations, producing peak discharges in the spring. Year-to-year variability in precipitation influences streamflow both in quantity and duration. Water scarcity has led to increased water storage, water diversions, and groundwater withdrawal associated with irrigation. These projects have significantly altered natural flow regimes, which has changed habitat conditions, channel stability, and timing of sediment and organic material transport. Throughout the planning area, streamflows have been altered by management activities such as water impoundments, water withdrawal, road construction, and grazing.

The Summer Lake Subbasin includes Ana River and the small streams which flow off Winter Rim and into Summer Lake. The Ana River is a spring-fed system which is captured in a reservoir and then flows to Summer Lake. Buck, Bridge, and Silver Creeks are the main streams which flow into the Paulina Marsh and then into Silver Lake. There are many intermittent streams and ephemeral drainages where the water infiltrates into the soil or evaporates. The intermittent streams have surface flows for some of the year or flows which are subsurface for a reach of the stream. They are in contact with the water table and either receive water from the groundwater system to surface flow or lose surface water to the groundwater. The ephemeral drainages are channels in which surface water flows immediately after snowmelt or rainfall and are always above the water table.

In the Lake Abert Subbasin, the Chewaucan River is the main stream system. It has many headwater tributaries in the forested mountains. It flows through marshes in the valley bottom and supplies most of the water to Lake Abert. There are many intermittent and ephemeral drainages, which dry up seasonally.

The major streams in the Warner Lakes Subbasin flow from the Warner Mountains. These include Twelvemile, Twentymile, Deep, and Honey Creeks. Most of the surface water would flow into the Warner Lakes and wetlands but is diverted for irrigation. There are many intermittent and ephemeral drainages, which dry up seasonally.

In the Guano Subbasin, Guano Creek is the major stream. It is intermittent, as are most of the other streams. There are many ephemeral streams, which have surface water in the channel only after snowmelt or rainfall. There are perennial springs which flow for

Table 2-14.—*Stream flow statistics in the subbasin review area*

Subbasin/ (hydrologic unit code)	Creek name	Period of record	Station number/(location)	Drainage area (miles^2)	Average annual flow (cfs)	Peak flow (cfs)	Base flow (cfs)
Summer Lake (17120005)	Buck Creek [1]	1989–1991	10391050 (NE¼SW¼ Section 18, T.28S., R.14E.)	300	11.9	85	1.5
Lake Abert (17120006)	Chewuacan River [2]	1925–1982	10384000 (SW¼NW¼ Section 26, T.33S., R.18E.)	275	146	6,490	9.4
Warner Lakes (17120007)	Twentymile Creek [2]	1911–1982	10366000 (SW¼NW¼ Section 25, T.40S., R.23E.)	194	52	3,670	0 [3]
Warner Lakes (17120007)	Deep Creek [2]	1923–1982	10371500 (SW¼NW¼ Section 15, T.39S., R.23E.)	249	134	9,420	1.7
Warner Lakes (17120007)	Honey Creek [2]	1950–1982	10378500 (SW¼SW¼ Section 20, T.36S., R.24E.)	170	34	11,000	0 [3]

[1] Information from "Compilation of Surface Water Records for Oregon, Sliver Lake, Warner Lake, and Goose Lake Basins, 1979–1991," Oregon Water Resources Department.
[2] Information from "Statistical Summaries of Streamflow Data in Oregon " Volume 1, Eastern Oregon. USGS Open Field Report 84-454, 1984.
[3] No flow at times.

a short length before moving to the subsurface.

Surface Water Quality

In the State of Oregon, the Environmental Protection Agency (EPA) has delegated authority to implement the "Federal Water Pollution Control Act" of 1972 and amendments ("Clean Water Act" [CWA] of 1977) to the Oregon Department of Environmental Quality (ODEQ). Federal land management agencies are designated by the State to assist in CWA implementation on public lands. As a designated management agency, the BLM must: (1) implement and enforce natural resource management programs for the protection of water quality on Federal lands under its jurisdiction; (2) protect and maintain water quality where it meets or exceeds applicable state and Tribal water standards; (3) monitor activities to assure that they meet standards and report the results to the State of Oregon; and (4) meet periodically to recertify water quality best management practices (BMP's). BMP's are methods, measures, or practices to prevent or reduce water pollution, including but not limited to structural and nonstructural controls, operations and maintenance procedures. BMP's are applied as needed to projects (Appendix D).

Water quality, as defined by the CWA, includes all the physical, biological, and chemical characteristics which affect existing and designated beneficial uses. The State of Oregon is required to identify which beneficial uses a waterbody currently supports or could support in the future. The primary benefits of surface water are domestic water supply, salmonid and resident fish habitat, irrigation, livestock watering, wildlife and hunting, fishing, water contact recreation, and aesthetic quality. Most streams on the LRA support State-designated beneficial uses. Elevated summer temperatures are the primary water quality problem identified by the State for some streams on the LRA. While some streams have been measured and violate the State standard for resident fish and aquatic life water temperature numeric criteria, it is unknown if the natural temperature potential would meet the criteria. ODEQ is currently reviewing standards (including temperature) for coldwater fisheries habitat in eastern Oregon. Revised standards could be available within the next 5 years. Causes of stream degradation are removal of riparian vegetation and destabilization of streambanks. The land use most commonly associated with these problems in the planning area is grazing. Other land uses associated with degraded streams include roads, trails, water withdrawal, reservoir storage and release, altered physical characteristics of the stream, and wetlands alteration.

The State of Oregon has established beneficial uses for the surface and groundwater within the planning area

and water quality standards which protect these uses. These uses are shown in Tables 2-15 and 2-16.

The water quality standards can be found at the ODEQ web site ([online] URL: www.deq.state.or.us). They are Oregon Administrative Rules, Department of Environmental Quality, Water Pollution, Division 41, "State-wide Water Quality Management Plan." The water quality standards are in QAR's 340-041-0001 to 0975 and specifically 340-041-0922—Beneficial Water Uses to be Protected in Goose and Summer Lake Basins, 340-041-0925—Water Quality Standards not to be Exceeded in Goose and Summer Lake Basins, 340-041-0882—Beneficial Water Uses to be Protected in Malhuer Lake Basin, 340-041-0885—Water Quality Standards not to be Exceeded in Malhuer Lake Basin.

Water Quality Impaired Stream Reaches

The State of Oregon is required by section 303(d) of the CWA to identify waters which are water quality impaired. This list is updated biannually and the State will develop a total maximum daily load allocation of the pollutant of concern. Table 2-17 lists the stream reaches in the planning area that have been identified by the ODEQ as being water quality limited. Summer Lake, Lake Abert, and Guano Subbasins are scheduled for total maximum daily load development by the year 2007. The Warner Lakes Subbasin is scheduled for total maximum daily load development by 2003.

USFS and BLM "Protocol for Addressing Clean Water Act Section 303(d) Listed Waters" was issued in May 1999 to provide the agencies with a consistent approach to addressing water quality limited water bodies on Federal lands. This guidance was developed in collaboration with the Environmental Protection Agency (EPA), ODEQ, and the Washington Department of Ecology. The protocol uses a three-prong approach to addressing water quality problems on Federal lands: a set of goals, a seven-component strategy, and a decision framework.

The BLM uses this Protocol to fulfill the agency's CWA responsibilities and provide assurance that management activities in 303(d)-listed waterbodies will contribute to the maintenance or restoration of water quality. This assurance is provided by documenting and implementing sufficiently stringent management measures during the planning and "National Environmental Policy Act" (NEPA) process, and by developing and implementing water quality restoration plans. The management prescriptions in a water quality restoration plan are drawn from Federal standards and guidelines and BMP's, and the prescriptions in a water quality restoration plan apply only to Federal lands. Appendix F3 describes the LRA strategy for developing water quality restoration plans.

Groundwater

Regional groundwater gradients and extensive aquifer logs. Groundwater is particularly valuable in the planning area because of limited surface water.

Groundwater occurs as both confined and unconfined aquifer systems. Most unconfined aquifers are located in stream valleys or associated with Pleistocene lakebeds that contain recent alluvial material, although some may exist as perched aquifers. Alluvial aquifers vary greatly in size and yield. These aquifers are important as transient storage systems to move groundwater to or from streams and the deeper confined aquifers. Some perched aquifers occur between the top of ridges and bottom of valleys and can usually be identified by the occurrence of springs above the valleys.

Little is known of the areal extent or depth of deep, confined bedrock aquifer systems. The EPA has not identified any sole-source aquifers in the planning area. Groundwater is used for irrigation, domestic use, and livestock use. There is some groundwater influenced by geothermal heat sources, and the springs have hot, mineralized water.

Springs and seeps occur in areas where water from aquifers reaches the surface. Some springs begin in stream channels, others flow into small ponds or marshy areas that drain into channels, and still others flow into lakes or reservoirs. Some springs and seeps form their own channels that reach flowing streams, but most lose their surface flow to evaporation or recharge the alluvial fill.

There are a few hot springs in the analysis area. These types of springs have vegetation and microbial and algal faunae that are adapted to the hot, mineralized water.

Springs have been disturbed by management activities, such as livestock or wild horse grazing and watering, recreation use, and road construction. This affects the amount of water available to the vegetation and soils where springs begin.

Table 2-15.—*Beneficial uses for Summer Lake, Lake Abert, and Warner Subbasins*

Beneficial Use	Freshwater lakes and reservoirs	Highly alkaline and saline lakes	Freshwater streams
Public domestic water supply	◆		◆
Private domestic water supply	◆		◆
Industrial water supply	◆	◆	◆
Irrigation	◆		◆
Livestock watering	◆		◆
Salmonid fish rearing (trout)	◆		◆
Salmonid fish spawning (trout)	◆		◆
Resident fish and aquatic life	◆	◆	◆
Wildlife and hunting	◆	◆	◆
Fishing	◆	◆	◆
Boating	◆	◆	◆
Water contact recreation	◆	◆	◆
Aesthetic quality	◆	◆	◆

Table 2-16.—*Beneficial uses for Guano Subbasin*

Beneficial use	Natural lakes	All rivers and tributaries
Public domestic water supply		◆
Private domestic water supply		◆
Industrial water supply		◆
Irrigation	◆	◆
Livestock watering	◆	◆
Salmonid fish rearing (trout)		◆
Salmonid fish spawning (trout)		◆
Resident fish and aquatic life	◆	◆
Wildlife and hunting	◆	◆
Fishing	◆	◆
Boating	◆	◆
Water contact recreation	◆	◆
Aesthetic quality	◆	◆

Community Drinking Water

Community water systems treat and distribute water from the source, primarily underground aquifers, and deliver it to consumers. Towns, small communities, and private farm and ranch residences all use groundwater as their source of drinking water (see Table 2-18).

Water Rights and 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 streamflows for fish, recreation, and water quality.

In Oregon, all water is publicly owned. Permits for water use from any source must be obtained from the Oregon Water Resources Department, with some exceptions. Laws pertaining to the use of surface water and groundwater are based on the principle of prior appropriation ("first in time, first in right") and limited to the quantity of water needed to satisfy the specified beneficial use without waste. That is, the first person to obtain a water right will be the senior holder on a

Table 2-17.—*1998 State of Oregon water quality impaired stream reaches on LRA-administered lands*

Subbasin	State identification	Waterbody	Parameter of concern
Summer Lake	OR42A-SILV0-1998	Silver Creek	Temperature
Summer Lake	OR42A-SIWF0-1998	Silver Creek, West Fork	Temperature
Lake Abert	OR42B-CHEW0-1998	Chewaucan River	Temperature
Lake Abert	OR42B-CHEW27.5-1998	Chewaucan River	Temperature, biological criteria
Lake Abert	OR42B-WILL0-1998	Willow Creek	Temperature
Warner Lakes	OR42C-CAMA0-1998	Camas Creek	Temperature
Warner Lakes	OR42C-DEEP0-1998	Deep Creek	Temperature
Warner Lakes	OR42C-DRAK0-1998	Drake Creek	Temperature
Warner Lakes	OR42C-FIFT0-1998	Fifteenmile Creek	Temperature
Warner Lakes	OR42C-HONE0-1998	Honey Creek	Temperature
Warner Lakes	OR42C-PARS0-1998	Parsnip Creek	Temperature
Warner Lakes	OR42C-SNYD0-1998	Snyder Creek	Temperature
Warner Lakes	OR42C-TWEL0-1998	Twelvemile Creek	Temperature
Warner Lakes	OR42C-TWEN0-1998	Twentymile Creek	Temperature
Goose Lake	OR42D-CRAN0-1998	Crane Creek	Temperature

particular stream and has priority over all junior claims in times of water shortage.

The State of Oregon recognizes instream water rights for the public benefit to maintain sufficient flows to protect recreation, fish, wildlife, and other river-related resources. Instream water rights are applied for by the ODEQ, the Department of Parks and Recreation, and the Department of Fish and Wildlife to the State's Water Resource Commission. The priority date for instream water rights is the date the application is submitted to the Water Resources Department.

Current BLM and Department of Interior (DOI) policy is to use the State's instream flow water right process to preserve flow-dependant values for any stream designated as a wild and scenic river (WSR). The "National Wild and Scenic Rivers Act" (Public Law 90-542) specifically reserves the minimum quantity of water necessary to maintain the values for which the river was designated. A Federal reserved water right is authorized by the Act, and the priority dates for each river segment is the date of designation. A Federal reserved water right would only be exercised if the State's appropriative instream water right process is inadequate to protect the designated values of the river. Current DOI policy provides latitude to cooperate with Oregon natural resource agencies to achieve resource protection objectives prior to exercising a reserved water right. This in no way abrogates the Federal reserved water right.

Additionally, Federal reserved water rights may be applied to important springs and waterholes pursuant to "Public Water Reserve No. 107, Executive Order of April 17, 1926," under the authority of section 10 of the "Stock-Raising Homestead Act of December 29, 1916." Public Water Reserve 107 reserves only the minimum amount of water necessary to accomplish the primary purpose of the reservation. There was no intent to reserve the entire yield of each public spring or waterhole withdrawn by the Executive order. The purposes for which these waters were reserved are limited to domestic human consumption and livestock watering on public lands. All waters from these sources in excess of the minimum amount necessary for these limited public watering purposes are available for appropriation through State water law and administrative claims procedures.

There are over 900 existing water storage impoundments, pipeline systems, groundwater wells, and irrigation diversions on public lands within the planning area that have State-approved water rights. The availability of water in much of the area is limited and may hamper additional developments that are water dependent. Future development for rangeland projects for wildlife, recreation, and livestock would require a State of Oregon water right before project implementation could occur.

The information presented in Table 2-19 is a summary developed by the EPA ([online] URL:http://

water.usgs.gov/cgi-bin/wuhuc?huc=17120005) on the 1990 USGS water use thermoelectric power, mining, livestock (stock and animal specialties), irrigation, hydroelectric power, wastewater treatment, and reservoir evaporation. The breakout by category can be found at the web site.

Fish and Aquatic Habitat

Introduction

Fisheries habitat includes perennial and intermittent streams, springs, and flatwater (lakes and reservoirs) that support fish through at least a portion of the year.

The condition of fisheries habitat is related to hydrologic conditions of the upland and riparian areas associated with, or contributing to, a specific stream or waterbody, and to stream channel characteristics. Riparian vegetation moderates water temperatures, adds structure to the banks to reduce erosion, provides overhead cover for fish, and provides organic material, which is a food source for macroinvertebrates. Intact vegetated floodplains dissipate stream energy, store water for later release, and provide rearing areas for juvenile fish. Water quality, especially in regard to factors such as temperature, sediment, and dissolved oxygen, also greatly affects fisheries habitat.

Habitat quality varies by stream reach, with canyons generally being in better condition due to inaccessibility and rock armoring. In these reaches, pool quality and quantity are usually good, and channel condition is not dependent on vegetation. On less confined, deep-soil reaches, vegetation controls habitat conditions that are variable depending on past and present management. Generally, the condition of these sites has improved in the resource area over the last 20 years as a result of stock management and exclusion. Some sites were degraded to the point that many years will be required for the streams to improve to a functional state. Large wood, while not meeting standards in the 1995 "Interim Inland Native Fish Strategy for the Intermountain, Northern, and Pacific Northwest Regions," is usually not a factor in determining function of the streams. Most sites on BLM-administered land naturally do not have an adequate source of large wood.

Public land provides habitat for nine native fish species (Table 2-20), four of which are federally listed under the "Endangered Species Act." In September 1997, a petition to list the Great Basin redband trout as threatened was filed. This petition included the four subpopulations in the LRA. After considering all available information and analyzing public comment, on March 20, 2000, the USFWS determined that listing the species was not warranted at this time (*Federal Register* Vol. 65, No. 54, 14932–14936). The BLM will pursue activities to improve conditions for redband trout to help prevent the need to list the species. Amphibians and aquatic invertebrates are integral components of the fish community. One amphibian, the Columbia spotted frog, is a candidate for listing under the "Endangered Species Act."

Several nonnative fish have been introduced into the planning area. ODFW periodically stocks a strain of hatchery rainbow trout in 10 reservoirs. In most of these reservoirs, spawning habitat is lacking and natural reproduction does not occur. In the past, cutthroat trout were planted in one stream. Currently, all stream liberation of hatchery trout has been discontinued by ODFW.

ODFW no longer routinely stocks warm-water fish species, but smallmouth bass, black and white crappie, and brown bullhead have become established from previous introductions in the Warner Lakes and some smaller reservoirs. Anglers illegally introduced these species in other reservoirs in the planning area.

ICBEMP rated the aquatic integrity of the subbasins throughout the project area. An aquatic system that exhibits high integrity has a mosaic of well-connected, high-quality water and habitats that support a diverse assemblage of native and desired nonnative species, the full expression of potential life histories, dispersal mechanisms, and the genetic diversity necessary for long-term persistence and adaptation in a variable environment. Subbasins exhibiting the greatest level of these characteristics were rated high and those exhibiting the least were rated low, with medium rating in between. The Guano Subbasin was rated as moderate aquatic integrity, while the other three subbasins in the planning area, Warner Lakes, Lake Abert, and Summer Lake, were rated as low aquatic integrity. Subbasins with low aquatic integrity may support populations of key salmonids or have other important aquatic values (that is, T&E species, narrow endemics, and introduced or hatchery-supported sport fisheries). In general, however, these watersheds are strongly fragmented by extensive habitat loss or disruption throughout the component watersheds, and most notably through disruption of the mainstem corridor. Although important and unique aquatic resources exist, they are usually localized (USDI-BLM and USDA-USFS 1996h). Appendices A1 and A2 contain a summary of the

Table 2-18.—*Community water systems identified by the U.S. Environmental Protection Agency*

Subbasin	Community water system	Filtered	Population served
Summer Lake	Christmas Valley Domestic Water System	Yes	400
Summer Lake	Silver Lake Ranger Station (USFS)	Yes	60
Summer Lake	City of Paisley	Yes	315

Table 2-19.—*1990 water use by category and subbasin*

Category	Summer Lake	Lake Abert	Warner Lakes	Guano
Total withdrawals				
Groundwater (mgal/d) [1]	82.78	2.62	1.59	5.68
Surface water (mgal/d)	77.90	166.81	201.24	55.98
Total	160.68	169.43	202.83	61.66
Total population served by subbasin	1,320	480	360	40
Number of public supply facilities	3	0	0	0

[1] mgal/d = one million gallons per day.

ICBEMP assessment applicable to the planning area. These findings are further discussed in the Water Resources section.

Species and Habitat

Trout

There are no anadromous salmonids (such as salmon and steelhead that return from saltwater to spawn) in the planning area. Redband trout, a relative of rainbow trout, is the native trout. These trout occur in nearly all perennial streams (consisting of approximately 60 miles on BLM-administered land) of the Warner Lakes, Goose, Lake Abert, and Summer Lake Subbasins. These subbasins make up four of six separate desert basin populations of interior native redband trout (Behnke 1992).

Redband trout evolved in Pliestocene lakes and moved into mid- to high-elevation streams as the climate became drier and warmer in portions of Oregon, Nevada, and Utah that do not have water outlets to the ocean. Redband trout are generally more tolerant of higher temperatures than are planted rainbow trout. The introduction of hatchery-raised rainbow trout as early as 1925 may have altered many of the unique characteristics of the native redband. Brook trout have competed for limited resources with redband. However, brook trout are known to occur only on the upper reaches of streams on private and Fremont Forest lands; they have only occasionally been found in the lower Chewaucan River on BLM-administered lands in the resource area.

Neither rainbow nor brook trout are native to the Great Basin. Brook trout, which evolved east of the Rocky Mountains, were introduced for sport fisheries. Hatchery rainbow may have come from coastal streams. Neither the extent of the loss of genetic purity nor the locations of the most pure strains of redband are known. Stocked rainbow trout are less able to survive the high temperatures and low oxygen levels of the local streams. Generally speaking, stocking any type of trout on BLM land has been discontinued except for the stocking done by ODFW in the Sid Luce, Big Rock, Lucky, Sunstone, Sherlock, Spaulding, Duncan, Priday, Mud Lake, and MC Reservoirs.

Cutthroat trout occur in the resource area only in Guano Creek. They were introduced in 1957. The early introductions were from Lahontain stock, but subsequent introductions from other stocks have altered the Lahontain genetic pattern of these fish. On the resource area, Guano Creek is intermittent; that is, it flows only in response to rain or snowmelt. Therefore, the trout are found only during spring runoff and in the longer lasting pools on the Shirk Ranch. They survive in the perennial reaches of the stream on Hart Mountain Refuge and in Jacobs Reservoir.

Warner Sucker (Listed Threatened)

Warner suckers (*Catostomus warnerensis*) are endemic to the Warner Valley and were listed as a threatened species in 1985. There are 43 miles of critical habitat

Table 2-20.—*Native fish of the Lakeview Resource Area*

Common name	Scientific name	Status
Warner sucker	*Catostomus warnerensis*	Federal threatened
Foskett speckled dace	*Rhinichthys osculus* ssp.	Federal threatened
Hutton tui chub	*Gila bicolor*	Federal threatened
Great Basin redband trout (several subspecies)	*Oncorhynchus mykiss* ssp.	
Tui chub (several subspecies)	*Gila bicolor*	
Modoc sucker	*Catostomus microps*	Federal threatened
Goose Lake sucker	*Catostomus occudentalis lacusanserinus*	
Pit brook lamprey	*Lampetra lethophaga*	
Speckled dace	*Rhinichthys osculus*	

in the resource area and 13.5 miles of critical habitat on BLM-administered lands.

Biological evaluations (see Glossary) on the effects of grazing on Warner suckers were completed in 1994 by the BLM. On those pastures with "may effect" or "likely to adversely effect" determinations from the evaluations, consultation between the BLM and USFWS in compliance with section 7 of the "Endangered Species Act" has been completed (Table 2-21). If either noncompliance with the terms and conditions of the biological opinion has occurred, or changes were made to the actions proposed in the original consultation, the consultation process has been reinitiated. Biological evaluations and reinitiation of the consultation are completed as needed. Biological evaluations and consultations are completed on all Federal actions taken by the BLM in the Warner Watershed south of Bluejoint Lake. Besides the grazing program, consultations have been completed on several fence construction projects, noxious weed control, road construction, waterhole maintenance, prescribed fire, commercial recreation permits, and a wetland management plan.

A recovery plan for the Warner sucker, Hutton tui chub (*Gila bicolor* spp.), and Foskett speckled dace (*Rhinichthys osculus* spp.) was approved in April, 1998 (USFWS 1998). It included descriptions, life histories, distribution, reason for decline, current conservation efforts, and recovery strategy of the species. Most importantly, it lists what actions must be completed to remove the species from the endangered species list. Many of the actions required to remove the species from listing, such as screening and providing passage over irrigation diversions, are needed on private lands and are beyond the scope of this plan. The BLM has worked on determining the population status of the species to establish the self-sustaining metapopulation requirements of the plan. BLM has also worked to identify existing habitats and assess their quality and to improve habitats by managing and excluding livestock.

Foskett Speckled Dace (Listed Threatened)

The Foskett speckled dace (*Rhinichthys osculus* ssp.), listed as threatened in 1985, occurs in a spring on BLM-administered land in Coleman Valley. The BLM acquired this land in an exchange with the private land owner and has maintained livestock exclusion on the spring area. Work, as outlined in the recovery plan (USFWS 1998), is planned to enhance the dace habitat and to reestablish the fish in an adjacent spring.

Hutton Chub (Listed Threatened)

The Hutton tui chub (*Gila bicolor*) was listed as threatened in 1985 and inhabits a privately-owned spring along the shore of Alkali Lake. The land owner has excluded grazing from the spring and has restricted public access to the spring in an effort to protect the chub habitat. BLM management actions around the spring are not likely to impact this species but are evaluated to assure no adverse effect. This species is also covered by the recovery plan, along with the Foskett speckled dace and Warner sucker (USFWS 1998).

Other Aquatic Species

Other fish of concern because of limited habitat and range include Sheldon tui chub (*Gila bicolor* spp.) in the Guano Basin, Summer Basin tui chub (*Gila bicolor* spp.) in the Summer Lake Basin and Oregon Lakes, and XL tui chub (*Gila bicolor* spp.) in the Chewaucan Basin.

Cowhead tui chub (*Gila bicolor vaccaceps*): Occur in a limited range in northern California on a tributary of Twelvemile Creek. This species was proposed for

listing, but the listing was postponed as a result of the development of a conservation agreement between the USFWS and the private land owners that manage the chub habitat. Because the LRA is downstream from this species' habitat, management actions by the Lakeview BLM will have no effect on this species. Management actions proposed in adjacent areas will be evaluated to assure they will have no adverse effect to the species.

Columbia spotted frogs (*Rana lutiventris*): Are a Federal candidate species and are known to occur in two locations in the Warner Basin. It is suspected these frogs occur in other locations but none have been located. This species may be considered for Federal listing in the future.

Spring snails (*Pristinicola* sp., *Pyrgulopsis* sp. and others): Occur in several springs scattered around the LRA. They tend to be endemic to the spring in which they occur. Some species have been described (i.e., XL and Abert), but many others have yet to be identified as unique.

Management Activities

Many activities affect the habitat conditions for fish in the area. Road construction has altered the ability of many streams to access their floodplains or has constricted their floodplains and has straightened or constricted many channels, resulting in channel incision. Logging and associated road construction have removed overstory cover on many watersheds, changing peak and base flows of the streams below. Abusive gazing has removed bank stabilizing vegetation and impacted banks directly. Water withdrawal since the turn of the century has affected the ability of fish to thrive in the streams. Irrigation water withdrawn from the major streams in the area reduces summer flows and raises water temperature. Channeling streams to better control the spread of water and removal of willows to create irrigated pasture and hay fields has resulted in channel incision and loss of habitat. Diversions often block upstream movement of trout from the lower reaches of streams and lakes to upper spawning areas. The movement of fish from Hart Lake into Honey Creek and from Crump Lake into Twentymile Creek is an example of this problem.

Active riparian management in the resource area has been initiated on nearly all perennial and many intermittent streams. Table 2-22 depicts the stream and the type of management that occurs on it. Some of the exclosures have been successful in controlling grazing use, while in others, grazing still occurred when livestock found their way through the exclosure fences. With the initiation of consultation with USFWS under section 7 of the "Endangered Species Act," more extensive efforts in locating unauthorized grazing use and construction of additional fencing has made most of the exclosures in the Warner Basin more effective. The resource area has initiated grazing management on 14 pastures to improve riparian conditions. When grazing occurs as directed by the BLM, management on these pastures has been successful in improving conditions.

Aquatic habitat surveys using the "Alaskan Aquatic Resource Information Management System" were completed in 1996 and 1997 on all of the perennial fish-bearing streams on the LRA (Table 2-23). The Fremont Forest completed many surveys on forest lands during these years as well. While much of the data collected from these surveys has yet to be analyzed, analysis of the data used in the "Deep Creek Watershed Analysis" (1998) indicated that stream temperature was the major limiting factor on the watershed's streams, resulting in a generally poor overall rating on most stream reaches. Temperatures greater than the State standard are the result of several factors, including water withdrawal, loss of streamside vegetation, channel widening, and lower summer flows. ODEQ is currently reviewing standards (including temperature) for coldwater fisheries habitat in eastern Oregon. Revised standards could be available within the next 5 years. Stream channel entrenchment has prevented water storage in floodplain soils, thereby reducing water storage that would promote longer-duration streamflow and reduced or eliminated interflow between cool/cold subsurface waters in the riparian area (floodplain) and surface streamflow. Even under pristine conditions, State standards for temperature would be unlikely to be achieved on BLM stream reaches. However, most other elements of pools per mile, large wood per mile, pools per mile greater than 2.6-feet deep, unstable banks, proper functioning condition rating and sediment rating were good to fair with some poor ratings.

While most stream conditions provide adequate habitat for suckers and trout, there are opportunities to enhance some habitat components. Deep pools may be created and stream width-to-depth ratios may be reduced with structural controls. Other projects could be implemented that would improve cover and forage areas. Management actions, including grazing control and instream projects, that would improve temperature conditions by channel narrowing and overstory vegetation establishment, could be initiated.

Table 2-21.—*Allotments and pastures under consultation for effect to Warner suckers*

Allotment	Pasture/Stream
Fish Creek (0519)	Deppy (Honey and Twelvemile Creeks)
Hickey Individual (0202)	Parsnip Seeding; Camas Riparian (Parsnip and Camas Creeks)
Lane Plan I (0207)	Juniper Lake (Twentymile Creek)
Lane Plan II (0206)	Parsnip Riparian; Thompson (Parsnip and Drake Creeks)
Rahilly/Gravelly (0212)	Horse Creek (Twelvemile and Horse Creeks)
Round Mountain (0211)	North; West (Twentymile, Twelvemile, and Fifteenmile Creeks)
Sagehen (0208)	Riparian (Deep and Camas Creeks)
Vinyard (0201)	Squaw Flat; Seeding (Deep Creek)

Wildlife and Wildlife Habitat

BLM is responsible for managing of a wide array of both native and introduced fish and wildlife habitats. In general, the ODFW is responsible for managing animal populations. However, an animal is inseparable from its habitat, and any management strategies must consider both the animal and its habitat.

Numerous species of wildlife occur in the LRA. However, only priority species or taxa and their associated habitats are discussed here. These animals are recognized as being of particular interest to the public and generally the emphasis for management. A subset of the priority taxa will be highlighted to provide background information and specific management opportunities relative to them. Special status species are discussed in the following section.

With priority habitat and priority animal taxa as background, the alternatives section will outline the various actions, in addition to those included in the current management direction, that could be implemented to maintain, improve, or expand the habitat conditions for the various animal species. The current management direction is derived from the "Warner Lakes and High Desert Management Framework Plans."

The planning area includes a number of priority habitats where the BLM generally focuses most management efforts. These habitats are the major plant communities or terrestrial features within the review area that are important to wildlife. Priority wildlife habitats include streamside riparian, springs, seeps, wet meadows, seasonal wetlands, playas and lake beds, cliffs, caves, talus slopes, dry meadows, dryland shrubs, juniper woodlands, ponderosa pine forests, mixed conifer forests, and quaking aspen groves.

Ongoing changes to these important plant communities, many of them caused by humans, have resulted in alterations to the animal habitat within the planning area. For example, wet meadows are converting to dry meadows as a result of lowering water tables caused by irrigation pumping and surface water diversion. Juniper encroachment is converting shrublands to woodlands, primarily because of changes in natural fire regimes. Quaking aspen stands are not regenerating themselves and are diminishing in numbers.

Golden eagles are a year-round resident of the planning area. Although these eagles are not in the resource area in large numbers, there are plenty of nesting sites, such as cliffs and large conifers. Golden eagle prey is generally plentiful and includes rabbits, hares, marmots, squirrels, deer and pronghorn fawns, and other medium-sized animals.

The peregrine falcon was taken off the T&E list in 1999 after the species reached the goals set forth in the 1982 "Pacific Coast Recovery Plan." The primary peregrine habitats in the LRA are along Fish Creek Rim and Abert Rims, but no nests have been found. One pair of falcons has been observed successfully nesting on Winter Rim. Two hack sites, one in Warner Valley and one in the Summer Lake Basin, have been used successfully to reintroduce 15–20 peregrines in the last several years.

Waterfowl and shorebirds are seasonally abundant in the planning area. Several species that are not federally listed but are considered sensitive species by BLM occur in the planning area. These include the long-billed curlew, western snowy plover, greater sandhill crane, and the white-faced ibis. Many of these birds successfully nest in Warner Valley, Summer Lake Basin, the Chewaucan Marsh, and in isolated potholes throughout the area. Early nesting species rely on residual cover for concealment and are reluctant to use an area without the previous year's growth. Mowing

Table 2-22.—*Livestock management for lotic riparian protection/enhancement*

	Exclusion areas		Pasture management	
Stream	Number	Stream miles (public/private)	Number	Stream miles (public/private)
Twentymile Creek	2	5.5/0	1	2.0/0
Twelvemile Creek	1	6.5/2.0	0	0
Fifteenmile Creek	5	2.5/0.75	1	2.5/0
Horse Creek	1	0/1.0	1	2.7/0.5
Honey Creek	2	4.25/4.5	0	0
Snyder Creek	2	1.5/0.5	0	0
Twelvemile Creek	1	2.25/0.25	0	0
Deep Creek	1	6.0/0	2	3.25/4.5
Camas Creek	2	2.25/0	1	1.5/0
Drake Creek	2	1.75/0	1	3.4/0
Parsnip Creek	1	1.0/0	1	1.5/0
Chewaucan River	0	0	1	3.25/0.75
Dicks Creek	0	0	1	0.5/0
Willow Creek	3	2.0/0	1	0.5/0.75
Guano Creek	1	9.75/0	0	0
Silver Lake drainage				
Buck Creek	2	2.25/0	0	0
Bridge Creek	1	0.25/0	2	1.0/0
Silver Creek	1	0.5/0	1	1.5/0
West Fork Silver Creek	0	0	1	2.0/0
Duncan Creek	1	0.5/0	1	2.25/0

hay or grazing can reduce or eliminate this cover. If the birds do use an area of sparse growth, nesting success is greatly reduced, usually because of predation.

Rocky Mountain elk numbers have been increasing in Lake County for the past 20 years. Populations are expanding toward the management objectives of ODFW's "Elk Management Plan." Habitat on BLM-administered lands is primarily winter range while summer and transitional range is on USFS lands.

Mule deer are the most numerous, adaptable, and widely-distributed big game species in the resource area. There is a high level of public interest in this species for hunting and viewing. Current resource area management has focused on improvement and maintenance of transitional and crucial winter range, development of water sources (primarily springs), and installation of guzzlers or man-made water collection and storage units, modification of livestock grazing systems to reduce competition with domestic livestock for winter browse and early green-up grasses, fencing riparian areas, closing roads seasonally, and conducting prescribed burns.

Pronghorn are the second most abundant big game species in the planning area. Pronghorn habitat consists primarily of Wyoming big sagebrush and low sagebrush lands. The planning area contains crucial winter range as well as summer- and year-long habitats for pronghorn. Water is sparsely distributed in the planning area. Approximately 3,000 to 5,000 pronghorn currently use the planning area throughout the year. However, ODFW indicates that pronghorn populations throughout Oregon, including the planning area, have declined 20 to 30 percent since 1991.

There are approximately 500 to 600 California bighorn sheep at various locations throughout the planning area. These locations are used year-round. Habitat is composed of sagebrush-grassland, escape areas, lambing areas, thermal protection, rutting areas, and foraging areas. The locations are characterized by

Table 2-23.— *Warner Valley stream survey summary*

Stream	Reach	Length (miles)	Pools/mile	Pools>2.6/mile	LWD/mile [1]	% Unstable banks	Rosgen type [2]	% public/ private
Twelvemile Creek	6	1.58	17.8	4.4	31.7	1.9	B3	100/0
Twelvemile Creek	5	2.10	12.8	3.3	0.5	19.7	C4	76/24
Twelvemile Creek	4	1.23	10.6	6.5	0.8	5.5	B4c	100/0
Twelvemile Creek	3	2.01	17.9	13.4	9.0	2.9	B2c	100/0
Twelvemile Creek	2	0.99	36.4	20.2	5.0	0.4	B3	55/45
Twelvemile Creek	1	0.89	12.3	4.5	0	3.4	F3	0/100
Fifteenmile Creek	4	2.49	14.1	0.0	4.0	2.5	E/C/B-15/10/65%	100/0
Fifteenmile Creek	3	1.05	31.5	0.0	49.7	28.0	C5/B4-50/50%	24/76
Fifteenmile Creek	2	2.69	54.0	1.1	26.1	5.6	B4	100/0
Fifteenmile Creek	1	0.26	38.7	7.7	23.2	0.0	A2a+	100/0
Twentymile Creek	1	0.87	41.4	4.6	4.6	6.0	A3	100/0
Horse Creek	4	0.84	33.3	4.8	2.4	23.3	C4	100/0
Horse Creek	3	0.98	32.7	9.2	1.0	0.5	C4b	100/0
Horse Creek	2	1.04	22.1	13.5	3.8	38.0	C4	0/100
Horse Creek	1	0.78	67.6	5.1	0.0	2.5	A2	23/77
Horse Trib	1	0.96	12.5	1.0	0.0	0.0	C5	100/0
Honey Creek	4	1.15	32.1	2.6	0.0	8.6	B4c	100/0
Honey Creek	3	1.03	24.3	4.9	1.9	12.5	B3c	20/80
Honey Creek	2	1.07	32.6	3.7	0.0	0.9	B4	0/100
Honey Creek	1	4.23	35.7	3.5	0.7	0.7	B3c	79/21
Snyder Creek	2	0.27	107.0	7.4	3.7	2.3	B4	100/0
Snyder Creek	1	1.71	41.5	3.5	0.0	0.6	C5/B3-50/50%	65/35
Twelvemile, Honey Creek	2	1.89	8.5	0.0	0.0	4.2	B3c	100/0
Twelvemile, Honey Creek	1	0.81	37.2	1.2	1.2	1.7	A3	75/25
Deep Creek	6	0.65	20.0	1.5	1.5	27.0	B4c	100/0
Deep Creek	5	1.95	39.5	7.2	3.6	29.0	B3a	100/0
Deep Creek	4	0.65	20.0	1.5	13.0	13.0	B2c	100/0
Deep Creek	3	1.92	10.4	2.6	0.0	31.0	c2	100/0
Deep Creek	2	0.84	25.1	4.8	0.0	28.0	B3c	100/0
Deep Creek	1	1.66	33.7	11.4	0.6	34.0	B3c	100/0
Drake Creek	6	0.51	66.1	1.9	11.7	20.0	B4c	100/0
Drake Creek	5	1.09	39.4	1.8	22.0	6.0	B2	100/0
Drake Creek	4	1.35	27.4	0.7	8.1	19.0	B3c	100/0
Drake Creek	3	0.14	29.0	0.0	0.0	1.0	C4	100/0
Drake Creek	2	0.09	42.4	21.2	0.0	0.0	B2c	100/0
Drake Creek	1	0.97	37.0	7.2	8.2	2.0	B3c	100/0
Roar Springs Creek	2	0.36	27.4	0.0	5.5	0.0	C5	100/0

Stream	Reach	Length (miles)	Pools/mile	Pools>2.6/mile	LWD/mile [1]	% Unstable banks	Rosgen type [2]	% public/ private
Roar Springs Creek	1	0.28	28.6	0.0	57.2	2.0	B4	100/0
Parsnip Creek	5	0.43	58.5	4.7	18.7	9.0	B4a	100/0
Parsnip Creek	4	0.98	52.8	0.0	2.0	19.0	C4	100/0
Parsnip Creek	3	0.19	56.4	10.3	0.0	1.4	E6	100/0
Parsnip Creek	2	0.64	45.4	0.0	9.4	21.0	C5	100/0
Parsnip Creek	1	0.63	79.7	8.0	0.0	32.0	F4	100/0
Camas Creek	3	0.41	24.6	4.9	12.3	1.0	B4c	100/0
Camas Creek	2	1.71	28.0	4.7	0.0	34.0	C4	100/0
Camas Creek	1	1.53	47.8	5.2	1.3	7.0	B3	100/0

[1] Large woody debris (see Appendix F2).
[2] Channel type description (Rosgen 1996).

rugged mountains, canyons, and escarpments. Water is a limiting factor and is supplied by big game guzzlers, natural seeps and springs, and waterholes.

Table 2-24 lists the priority species in the planning area and the reason that they are considered priority.

Special Status Animal Species

Special status species are designated by Bureau 6840 policy. A listing of special status species was developed using the following criteria: Federal threatened, Federal endangered, proposed threatened, proposed endangered, and BLM special status species. Table 2-25 lists special status species known or suspected to occur in the LRA. There are three categories of special status species, (1) Bureau sensitive, (2) Bureau assessment, and (3) Bureau tracking. Bureau sensitive species are those that could easily become endangered or extinct. Bureau assessment species are those not presently eligible for official Federal or state status, but are of concern in Oregon. Bureau tracking species are those that may become a species of concern in the future. These species occur in many of the priority habitats on the resource area including streamside riparian, seasonal wetlands, playas and lake beds, cliffs, talus slopes, wet meadows, dry meadows, dryland shrub, juniper woodlands, and ponderosa pine forests. Following is a brief description of the special status species that occur in the planning area. A complete description of priority habitats and special status species is contained in Appendix P.

Bald eagle: The bald eagle was listed in 1978 as a Federal threatened species in Oregon under the "Endangered Species Act" and may be taken off the list in the future by the USFWS. Under the "Endangered Species Act," Federal agencies are directed to ensure that any actions authorized, funded, or conducted by them do not jeopardize the continued existence of a listed species or result in the modification or destruction of critical habitat. The Act also applies to old candidate species now considered BLM sensitive and relates to actions that would cause the need to further list the species.

The reason for possibly removing the bald eagle from the threatened list is that recovery goals identified in the 1986 "Recovery Plan for the Pacific Bald Eagle" have been met. Habitat for bald eagles within the seven-state Pacific Recovery Zone (Oregon, Washington, Nevada, California, Idaho, Montana, and Wyoming) has been secured and population levels in specific geographic areas have been reached.

Inventories of nesting bald eagles within the LRA have been conducted annually since 1979 by the Oregon Cooperative Wildlife Research Unit out of Oregon State University, Corvallis, Oregon; the Oregon Eagle Foundation in cooperation with BLM; and USFS wildlife biologists. The surveys over the years have only found one bald eagle nest on BLM-administered lands and one on USFS-administered lands 1 mile from the USFS/BLM boundary. The surveys have also detected one nest located on private land surrounded by BLM land.

Inventories of wintering bald eagles, foraging areas, and communal night roosts have been conducted within Lake County by BLM, USFS, and Oregon Eagle Foundation biologists. Bald eagles forage in the winter in the Fort Rock, Warner, Goose Lake, Crooked Creek, and Chewaucan Marsh Valleys. A communal winter roost has been located on the USFS/BLM-administrative boundary in north Lake County.

Bald eagles select large, old growth trees primarily in ponderosa pine, mixed-conifer forest types to nest (Anthony et al.1982). Anthony also noted that most nests (84 percent) are located within 1 mile of large bodies of water, such as lakes and reservoirs. Nest trees were found to be the larger, dominant or codominant trees in the stand and were usually components of old growth forests. The nest trees selected usually have an open view of the area, a clear flight path to and from the tree, and suitable perch trees nearby. Occasionally large snags and osprey nesting platforms are used.

Current management direction for bald eagles is outlined in the "Working Implementation Plan for Bald Eagle Recovery in Oregon and Washington"(USFWS 1989). This plan provides specific direction for the management of bald eagle nests and roost sites. The LRA is also cooperating with the USFS and has set up a bald eagle management area for each of the nests occurring on the USFS/BLM administrative boundaries. The goals, objectives, and stipulations agreed to in the joint Bald Eagle Management Area are taken out of the implementation plan.

Peregrine falcon: The peregrine falcon was federally listed as an endangered species throughout its range under the "Endangered Species Act," and as a State endangered species in Oregon (ORS 1987). In 1999, the peregrine falcon was removed from the endangered species list after reaching the recovery goals set forth in the 1982 "Pacific Coast Recovery Plan for the Ameri-

can Peregrine Falcon."

The recovery plan called for 185 productive nesting pairs with a 5-year average fledging success of 1.5 young per active pair within its former range in the Pacific States to delist the species. This benchmark was met in 1999.

Inventories conducted by the Wilderness Research Institute, Incorporated, (1982) revealed no active peregrine nests in Lake County. However, it was determined that there was some suitable habitat along Fish Creek Rim, between Plush and Adel, Oregon, where researchers concentrated their search. Peregrines have historically nested along Fish Creek rim prior to 1948, but no nesting has been observed since. Pagel surveyed all suitable nesting habitat in 1999 and found no active peregrine nests (Pagel 1999). He also expanded his search to other potentially suitable rims within the LRA and plans to continue the study in the future to cover the entire LRA.

There are two hack sites where young peregrines hatched in captivity were reintroduced into the wild in Lake County. One site is in the Warner Valley and one in the Summer Lake Basin. Approximately 15–20 peregrines were successfully reintroduced into the wild through cooperative efforts of the BLM, USFS, USFWS, ODFW, and the Peregrine Fund. Many of the released birds have been observed in the Warner Valley, Summer Lake Basin, and Abert Lake area since the reintroductions, and one pair has been observed successfully nesting on Winter Rim on USFS-administered lands.

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 nongame birds, shorebirds, and waterfowl, the peregrine's primary prey. Fish Creek Rim contains suitable habitat but no known nests. One possible reason is that during prolonged drought cycles common to eastern Oregon, Warner Valley is totally dry and as a consequence, shorebird and waterfowl numbers are down or nonexistent. When a wet cycle occurs, it takes 2–3 years for waterfowl and shorebirds to relocate the area and provide the prey base necessary for peregrines to successfully nest. This same situation applies to Abert Rim and Lake Abert. Summer Lake Basin maintains some water even during drought years as a result of management on ODFW's Summer Lake Management Area. It attracts enough shorebirds and waterfowl to provide a prey base for nesting and resident peregrines.

Greater sage-grouse: The western subspecies of the sage grouse was federally listed as a candidate species (Category 2) by the USFWS until candidates were recently dropped from the list. The greater sage-grouse throughout its range is of high public interest and is designated by BLM as a special status species and USFWS species of concern. The greater sage-grouse is currently under consideration for listing as either a threatened or endangered species.

Sage grouse populations have exhibited long-term declines throughout North America, declining by 33 percent over the past 30–40 years. The species has disappeared in five states (Arizona, New Mexico, Oklahoma, Kansas, and Nebraska) and one province (British Columbia) and is "at risk" in six other states (Washington, California, Utah, Colorado, North Dakota, and South Dakota) and two provinces (Alberta and Saskatchewan). Even in states where the species is considered to be "secure" (Oregon, Nevada, Idaho, Wyoming, and Montana), long-term population declines have averaged 30 percent (Connelly and Braun 1997; Crawford and Lutz 1985). Greater sage-grouse population estimates for Lake County are not available. However, the BLM in cooperation with the ODFW has conducted limited nonsystematic lek inventories for greater sage-grouse on the resource area since 1977 and the general population trend corresponds to declines observed throughout the west.

Oregon BLM is committed to the implementation of the "Greater Sage-Grouse and Sagebrush-Steppe Ecosystem Management Guidelines" (2000). While these guidelines focus on greater sage-grouse as an icon, they are dedicated to all of the shrub-steppe obligate species that have been the focus of the ICBEMP effort. This plan in essence will step-down the results of the ICBEMP to application at the field level.

Greater sage-grouse depend on sagebrush/grassland communities. Existing habitat is displayed on Map W-1. Big sagebrush, the primary species grouse depend on in Lake County, is usually associated with western juniper, although juniper is not necessarily a habitat component. Greater sage-grouse are most frequently found in sagebrush covered flatlands or gently rolling hills. Free water is also a component of greater sage-grouse habitat, but they do not require it for their daily survival. Water is used when available from late spring through late fall, and sage grouse attain their highest population densities in areas that contain abundant and well-distributed surface water. Sage grouse rely on snow and ice during the winter months and moisture from succulent plants when available.

Table 2-24.—*Priority animal taxa*

Common name	Scientific name	Status [1]
Amphibians and Reptiles		
Columbia spotted frog	*Rana luteiventris*	FC
Northern sagebrush lizard	*Scelophorus graciosus graciosus*	SOC
Birds		
Bald eagle	*Haliaeetus leucocephalus*	FT
Black tern	*Chlidonias niger*	SOC
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	SOC
Ferruginous hawk	*Buteo regalis*	SOC
Greater sage-grouse	*Centrocercus urophasianus phaios*	SOC
Northern pygmy owl	*Glaucidium gnoma*	HI
Northern Goshawk	*Accipiter gentilis*	SOC
Olive-sided flycatcher	*Contopus cooperi borealis*	SOC
Peregrine falcon	*Falco peregrinus anatum*	SOC
Western Burrowing owl	*Athene cunicularia hypugea*	SOC
Western least bittern	*Ixobrychus exilis*	SOC
White-faced ibis	*Plegadis chihi*	SOC
Fish		
Catlow tui chub	*Gila bicolor* ssp.	SOC
Cowhead tui chub	*Gila bicolor* spp.	HI
Foskett speckled dace	*Rhinichthys osculus* ssp.	FT
Goose Lake lamprey	*Oncorhynchus mykiss* ssp.	SOC
Goose Lake sucker	*Catostomus occidentalis lacusanserinus*	SOC
Goose Lake redband trout	*Oncorhynchus mykiss* ssp.	SOC
Hutton Springs tui chub	*Gila bicolor* ssp.	FT
Interior redband trout	*Oncorhynchus mykiss gibbsi*	SOC
Oregon Lakes tui chub	*Gila bicolor oregonensis*	SOC
Pit roach	*Lavinia symmetricus mitrulus*	SOC
Sheldon tui chub	*Gila bicolor eurysoma*	SOC
Summer Basin tui chub	*Gila bicolor* ssp.	SOC
Warner sucker	Catastomus warnerensis	FT
Warner Valley redband trout	*Oncorhynchus mykiss* ssp.	SOC
Invertebrates		
Abellan hydropsyche caddisfly	*Hydropsyche abella*	SOC
Montane peaclam	*Pisidium ultramontanum*	SOC

Common name	Scientific name	Status [1]
Mammals		
California bighorn sheep	*Ovis canadensis californiana*	SOC
California wolverine	*Gulo gulo luteus*	SOC
Canada lynx	*Lynx canadensis*	FT
Long-eared myotis (bat)	*Myotis evotis*	SOC
Long-legged myotis (bat)	*Myotis volans*	SOC
Mule deer	*Odocoileus hemionus*	HI
Pale western big-eared bat	*Corynorhinus townsendii pallescens*	SOC
Pronghorn	*Antilocapra americana*	HI
Pygmy rabbit	*Brachylagus idahoensis*	SOC
Rocky Mountain elk	*Cervus elaphus*	HI
Small-footed myotis (bat)	*Myotis ciliolabrum*	SOC
Yuma myotis (bat)	*Myotis yumanensis*	SOC

[1] Abbreviations: FT = Federal threatened; FC = Federal candidate; HI = high public interest, and SOC = USFWS species of concern.

Townsend's big-eared bat: This bat is a BLM sensitive species that occurs in a wide variety of habitat types. This species uses caves and cave-like structures, including abandoned mine shafts and tunnels for roosts and hibernating or wintering habitat. They also require wet meadows and riparian areas where they can forage for flying insects. Bat surveys have been conducted in the LRA, and a few Townsend's big-eared bats have been found. All abandoned mines on the LRA are surveyed for bats before the mines are permanently closed.

Livestock Grazing Management

Introduction

The "Taylor Grazing Act" was passed on June 28, 1934, to protect public lands and their resources from degradation, to provide orderly use to improve and develop public rangelands, and to stabilize the livestock industry. Following various homestead acts, the "Taylor Grazing Act" established a system for allotting grazing privileges on Federal land to livestock operators based on grazing capacity and use priority, and for the characterization of allotment boundaries. The Act also established standards for rangeland improvements and implemented grazing fees. Approximately 142 million acres of land in western states were under the jurisdiction of the Grazing Service, which evolved into the BLM in 1946. The "Federal Land Policy and Management Act" (FLPMA) was passed in 1976, and the "Public Rangelands Improvement Act" (PRIA) passed in 1978. These also provide authority for managing grazing on public lands.

Livestock Grazing

Authorization

Livestock grazing is administered on 120 allotments in the LRA. Allotment boundaries are illustrated on Map G-1. Information specific to each of the 120 allotments in the planning area is provided in Appendix E1 and is summarized in Table 2-26. A total of 69 permittees are authorized to graze livestock in these allotments under section 3 of the "Taylor Grazing Act." Five permittees are authorized to graze livestock in parcels included under section 15 of the Act. Total active preference of all permittees in the planning area is 164,128 animal unit months (AUM's). The total number of AUM's of grazing use for each of the last 10 years is shown in Table 2-27.

In accordance with rest rotation grazing system objectives, not all public land in grazing allotments is used every year. In order to promote healthy rangelands, specific pastures are designed to be rested from livestock use.

Known problems pertaining to livestock grazing are not related to existing forage allocations, but needed changes in management such as season of use.

When additional forage is available on public lands, temporary nonrenewable grazing use is periodically

Table 2-25.—*Bureau sensitive species* [1]

Common name	Scientific name	Occurrence within LRA
Amphibians and Reptiles		
Northern leopard frog	*Rana pipiens*	Unknown
Oregon spotted frog	*Rana pretiosa*	Unknown
Western pond turtle	*Clemmys marmorata*	Unknown
Birds		
Black-backed woodpecker	*Picoides arcticus*	Documented, occasional
Flammulated owl	*Otus flammeolus*	Unknown
Lewis' woodpecker	*Melanerpes lewis*	Documented, occasional
Mountain plover	*Charadrius montanus*	Unknown
Purple martin	*Progne subis*	Unknown
Red-necked grebe	*Podiceps grisegna*	Suspected, occasional
Upland sandpiper	*Bartramia longicauda*	Unknown
Western snowy plover	*Charadrius alexandinus nivosus*	Documented
White-headed woodpecker	*Picoides albolarvatus*	Documented, occasional
Yellow rail	*Coturnicops noveboracensis*	Documented
Yellow-billed cuckoo	*Coccyzus americanus*	Unknown
Invertebrates		
Casebeer prebblesnail	*Flumicola* sp. nov.	Unknown
Great Basin ramshorn	*Vorticifex* sp. nov.	Unknown
Lake of the Woods prebblesnail	*Flumicola* sp. nov.	Unknown
Modoc sideband	*Monadenia* sp. nov.	Unknown
Tigerlily preblesnail	*Flumicola* sp. nov.	Unknown
Mammals		
Kit fox	*Vulpes macrotis*	Documented, rare
Pacific Fisher	*Martes pennanti pacifica*	Unknown

[1] BLM sensitive species of which very little is known about their distribution, abundance, or occurrence on the resource area. Impacts to species that are known or suspected to occur on the resource area are considered in site-specific environmental assessments.

authorized for qualified applicants when such use is consistent with meeting multiple use objectives.

In the LRA, 261,566 acres of public land have been set apart from grazing allotments specifically to either (1) improve or protect resource values, or (2) they were found to be unsuitable for livestock grazing. Table 2-28 identifies land that is not allocated to livestock production and is not included in a grazing allotment. About 124,800 acres within the LRA have available forage produced annually but not allocated to specific livestock operators. Livestock use in some of these areas is authorized on a temporary basis to provide management flexibility for livestock operators. That flexibility has been used for fire closures, poor climatic conditions, and recovery of resource values. It has also been used to rest or defer the use of other pastures or allotments so that resource values can recover. About 136,766 acres are excluded from grazing on a permanent basis.

Additional areas (encompassing 472,890 acres) within livestock grazing allotments have limited use based on prior agreements or decisions. Limiting use or excluding livestock protects resource values or facilities from livestock-related impacts. Examples of such resource values and facilities include but are not limited to

developed water sources, riparian communities, streams, reservoirs, springs and wetlands; WSA's, special status plant or animal habitats, relevant and important values for which ACEC's are designated; research and study plots; and administrative, recreation, and archaeological sites.

Standards for Rangeland Health and Grazing Management Guidelines

The 1996 rangeland reform process modified the grazing regulations identified in 43 CFR part 4100. A new regulation was developed and is currently being implemented throughout the BLM. The regulation, 43 CFR 4180, addresses the fundamentals of rangeland health. In August 1997, the standards and guidelines that were developed in consultation with the Southeast Oregon Resource Advisory Council and Provincial Advisory Committees, Native Americans, and others, were approved by the Oregon State Director for Oregon/Washington. These standards and guidelines are intended to provide a clear statement of agency policy and direction for those who use public lands for livestock grazing and for those who are responsible for their management and accountable for their conditions.

The objectives of the rangeland health regulations are 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 productive, healthy public rangelands." The fundamentals of rangeland health combine the basic precepts or physical function and biological health with elements of law relating to water quality and plant and animal populations and communities. Although the focus of the standards is on domestic livestock grazing on BLM-administered lands, on-the-ground decisions must consider the effects and impacts of all uses.

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 five standards are as follows:

Standard 1, Watershed Function—Uplands: Upland soils exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate to soil, climate, and landform.

Standard 2, Watershed Function—Riparian/Wetland Areas: Riparian/wetland areas are in properly functioning physical condition appropriate to soil, climate, and landform.

Standard 3, Ecological Processes: Healthy, productive, and diverse plant and animal populations and communities appropriate to soil, climate, and landform are supported by ecological processes of nutrient cycling, energy flow, and the hydrologic cycle.

Standard 4, Water Quality: Surface water and groundwater quality, influenced by agency actions, complies with State water quality standards.

Standard 5, Native, Threatened and Endangered (T&E), and Locally Important Species: 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.

The complete "Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands in Oregon and Washington" are found in Appendix E4.

Based on 43 CFR part 4180, if livestock are contributing to the nonattainment of a standard, as soon as practical but no 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).

The LRA commenced assessment of the standards and guidelines in 1998 and will continue this process for the next 8 years. Approximately 10 percent of the public land acres in the resource area would be assessed each year. The process has been completed on 12 allotments encompassing 801,654 acres through the end of the 2000 fiscal year. Ten term grazing permits, which have been through the assessment process, were issued through the end of fiscal year 2000. In the assessments completed, livestock were not identified as contributing to the nonattainment of any standard, except in one situation. This was mitigated through an administrative jurisdictional transfer of a portion of the Jack Lake riparian pasture in the Beaty Butte Allotment to the USFWS. Management was changed to reflect their existing land use plan (i.e., no grazing). If a term grazing permit expires and an assessment cannot be completed due to conflicting workloads, a standard stipulation is placed in the terms and conditions of the permit, identifying that an assessment will be completed in the future. This assessment may result in a

Table 2-26.—*Forage allocation and allotment summary*

Allotment number	Allotment name	MIC 1999	Public land acres	Other acres	Animal unit months (AUM's): Current deer/ prong-horn	Additional deer/ prong-horn	Additional elk	Additional bighorn sheep	Other wildlife	New wildlife total	Wild horse [1]	Livestock	SNU [2]	Period of use [3]	Grazing system [4]	AMP Date	Allotment evaluation	Management objective [5]
00100	Peter Creek	M	13,800	640	25	0	30	0	5	60	0	329	0	Sp,Su,Fa	RR	1990		4
00101	East Green Mountain	M	17,241	1,440	285	0	50	0	30	365	0	980	0	Sp,Su,Fa	RR	1993		4
00102	Crack-in-the-Ground	I	15,419	400	133	0	40	0	10	183	0	298	0	Sp,Su,Fa	RR			4
00103	ZX-Christmas Lake	I	524,180	54,640	500	0	260	0	29	789	778/408	31,069	6,588	Sp,Su,Fa	DRR		1990	4
00200	Blue Creek Seeding	C	600	0	45	0	0	0	5	50	0	131	0	Su, Fa	Sp,Su			1,2,3,4
00201	Vinyard Individual	I	8,600	160	100	0	10	100	12	222	0	460	0	Sp,Su	RR	1969	1999	1,2,3,4
00202	Hickey Individual	M	10,906	90	85	0	30	0	17	132	0	583	0	Sp,Su,Fa	DR	1975	1993	1,2,3,4
00203	O'Keeffe FRF	C	565	0	1	0	9	0	1	11	0	48	0	Sp	Sp			1,2,3,4
00204	Crump Individual	I	2,930	395	45	0	0	100	5	150	0	92	0	Sp,Su	Sp		1993	4
00205	Greaser Drift	M	9,210	0	90	0	0	30	10	130	0	356	0	Fa, Wi	Fa			1,3,4
00206	Lane Plan II	I	9,910	3,330	130	0	30	0	16	176	0	450	0	Sp,Su	RR	1970	1993	1,2,3,4
00207	Lane Plan I	M	24,725	1,370	180	0	30	0	20	230	0	1,942	0	Sp,Su,Fa	RR	1971	1993	1,2,3,4
00208	Sagehen	M	3,820	2,050	40	0	30	0	20	90	0	266	0	Fa	D		1992	1,2,3,4
00209	Schadler	C	790	0	15	0	15	0	5	35	0	39	0	Su,Fa	Sp,Su			1,2,3,4
00210	Rim	M	2,376	680	10	0	0	0	5	15	0	49	0	Sp,Su	Sp,Su			4
00211	Round Mountain	M	16,330	1,640	160	0	90	0	23	273	0	1,102	0	Sp,Su	RR	1970	1990	1,2,3,4
00212	Rahilly-Gravelly	I	33,285	2,031	90	239	0	0	21	350	0	1,781	0	Sp,Su,Fa	RR	1984	1992	1,2,3,4
00213	Burro Springs	M	7,500	0	55	0	0	20	5	80	0	279	0	Sp,Wi	Sp		1992	1,3
00214	Chukar Springs	M	1,764	0	10	0	0	20	5	35	0	52	0	Sp	Sp			1,3,4
00215	Hill Camp	M	30,790	2,710	270	0	0	45	30	345	0	3,932	0	Sp,Su,Fa	RR	1975		1,2,3,4
00216	O'Keeffe Individual	I	51,785	3,010	240	0	0	0	26	266	0	4,808	0	Sp,Su,Fa	RR	1989		1,3,4
00217	Cox Individual	I	1,246	60	65	0	0	0	5	70	0	74	0	Sp,Su,Fa,Wi	RR	1972		1,3,4
00218	Sandy Seeding	M	4,850	0	25	0	0	0	5	30	0	600	0	Sp	Sp		1993	4
00219	Cahill FRF	C	470	0	15	0	0	0	5	20	0	280	0	Fa,Wi	Wi			1,3,4
00222	Fisher Lake	M	4,230	656	45	0	0	0	5	50	0	781	0	Sp,Wi	Wi	1975	1992	1,3,4
00223	Hickey FRF	C	412	0	50	0	15	0	11	76	0	64	0	Sp	Sp,Su		1992	4
00400	Paisley Common					0	0	0	0	0								
	Coglan Hills	M	12,774	0	10	105	0	40	5	160	0	117	0	Sp	Sp,Su			4
	Diablo Peak	C	74,098	0	0	0	0	120	0	120	0/123	0	0	N/A	N/A			4
	Abert Rim	C	14,659	0	160 [6]	0	0	180	20	360	0	0	0	N/A	N/A			4
00401	Fenced Federal	C	160	520	0	0	0	0	0	0	0	16	0	Sp	Sp			4

Allotment number	Allotment name	MIC 1999	Public land acres	Other acres	Animal unit months (AUM's): Current deer/ prong-horn	Addi-tional deer/ prong-horn	Addi-tional elk	Addi-tional bighorn sheep	Other wildlife	New wildlife total	Wild horse [1]	Livestock	SNU [2]	Period of use [3]	Grazing system [4]	AMP Date	Allot-ment eval-uation	Manage-ment objec-tive [5]
00403	Pine Creek	C	400	1,160	1	0	0	0	1	2	0	18	0	Sp,Su	Sp			4
00404	Willow Creek	M	11,805	8,845	5	190	0	0	5	200	0	472	0	Sp,Su	RR			1,3,4
00406	West Clover Flat	C	748	2,776	1	0	0	0	1	2	0	15	0	Sp,Fa	Sp,Su			1,2,4
00407	Clover Flat	M	2,521	4,851	15	20	0	0	5	40	0	200	0	Sp,Su	Sp,Su			1,2,4
00408	Schoolhouse	C	55	1,980	0	0	0	0	0	0	0	0	0		N/A			
00409	Tucker Hill	C	3,534	323	15	0	0	0	5	20	0	0	0		N/A			
00410	Tim Long Creek	C	340	1,155	0	0	0	0	0	0	0	15	0	Sp,Su	Sp			1,4
00411	Jones Canyon	C	636	0	0	0	0	0	0	0	0	13	0	Sp	Sp			4
00412	Fir Timber Butte	M	3,462	3,172	20	8	0	30	2	60	0	58	0	Sp,Su	Sp		1992	1,4
00415	Briggs Garden	C	785	899	5	0	0	0	2	7	0	42	0	Sp	Sp,Su			4
00416	White Rock	C	565	438	0	0	0	0	1	1	0	10	0	Sp,Su,Fa	Sp,Su			4
00418	Squaw Lake	M	43,269	520	80	0	0	0	16	96	35/69	834	0	Sp	RR			4
00419	St. Patricks	M	23,460	1,240	50	0	0	0	3	53	58/39	750	0	Sp	Sp			4
00420	Egli Rim	M	21,052	0	20	0	0	0	11	31	0/14	925	0	Sp,Su	RR			4
00421	Rosebud	M	10,640	2,040	3	0	0	0	3	6	0	158	0	Wi	Wi			4
00422	Paisley Flat	M	4,549	0	15	0	0	0	5	20	0	585	0	Sp,Wi	Sp		1992	4
00423	Hill Field	M	4,198	1,140	0	80	0	150	10	240	0	238	0	Sp,Su	Sp,Su			4
00424	West Lake	M	6,886	320	0	110	0	0	10	120	0	550	0	Sp,Fa	Sp		1999	4
00425	Pike Ranch	M	4,560	1,600	0	0	0	0	0	0	0	95	0	Fa	Sp,Fa			4
00426	Five Mile Butte	I	41,815	1,216	0	105	0	100	15	220	0/45	1,021	0	Sp,Wi	Sp,Su		1992	4
00427	XL	I	37,003	190	150	0	0	0	25	175	0	4,220	0	Sp,Su,Wi	DR		1992	4
00428	Sheeprock	I	144,025	4,460	100	0	0	220	17	337	929/490	4,000	0	Sp	RR			4
00429	Twin Lakes	M	17,050	0	15	120	0	0	15	150	0	2,272	0	Sp,Su	Sp,Fa		1992	4
00430	South Poverty	M	35,382	0	0	75	0	0	5	80	0	4,201	0	Sp,Su,Wi	RR		1992	4
00431	Narrows	M	8,486	180	20	0	0	100	20	140	0	275	0	Wi	D			4
00432	Coleman Seeding	M	5,839	0	30	0	0	0	5	35	0	920	0	Sp,Su	RR		1992	4
00433	East Jug	M	12,325	0	20	50	0	0	10	80	0	2,236	0	Sp,Su	D		1992	4
00435	Shale Rock	I	12,853	0	0	0	0	0	0	0	0	1220	0	Fa,Wi	D			4
00501	Flynn	C	2,780	0	50	0	0	0	5	55	0	120	134	Sp,Su,Fa,Wi	FRF [7]			4
00502	Fitzgerald	C	5,150	0	50	0	15	0	10	75	0	329	0	Sp,Su,Fa,Wi	FRF [7]			4
00503	Taylor	C	6,110	0	50	0	15	0	10	75	0	295	0	Sp,Su,Fa,Wi	FRF [7]			1,2,3,4
00505	Lynch	C	180	0	0	0	0	0	0	0	0	20	0	Sp,Su,Fa,Wi	FRF [7]			4
00507	Laird	C	2,030	0	0	0	0	0	0	0	0	120	0	Sp,Su,Fa,Wi	FRF [7]			4

Allotment number	Allotment name	MIC 1999	Public land acres	Other acres	Animal unit months (AUM's): Current deer/ prong-horn	Additional deer/ prong-horn	Additional elk	Additional bighorn sheep	Other wildlife	New wildlife total	Wild horse [1]	Livestock	SNU [2]	Period of use [3]	Grazing system [4]	AMP Date	Allotment evaluation	Management objective [5]
00508	Rock Creek Ranch	C	280	0	0	0	0	0	0	0	0	9	0	Sp,Su,Fa,Wi	FRF [7]			4
00509	Cox Butte	I	38,340	0	50	0	0	0	13	63	0	1,196	124	Sp,Su,Fa	Sp,Su		1993	3,4
00510	Orijana Rim	I	57,280	0	80	0	0	50	20	150	0	1,423	352	Sp,Su,Fa	Sp,Su			1,3,4
00511	Northeast Warner	I	139,019	1,680	6	538	0	120	6	670	0	6,151	234	Sp,Su,Fa	Sp,Su			1,3,4
00512	North Bluejoint	I	22,440	3,640	80	0	0	0	20	100	0	289	79	Sp,Su	Sp,Su			4
00514	Corn Lake	I	78,476	1,710	30	94	0	0	16	140	0	2,663	1034	Sp,Su,Fa,Wi	RR			3,4
00515	Juniper Mountain	M	91,720	760	90	240	60	40	26	456	0	3,621	796	Sp,Su,Fa	RR			1,2,3,4
00516	Rabbit Basin	M	32,211	400	0	55	0	0	5	60	0	1,846	0	Sp,Su,Fa,Wi	Sp		1993	3,4
00517	Coyote-Colvin	I	123,038	15,002	70	913	75	30	17	1105	0	5,091	0	Sp,Su,Fa,Wi	RR			3,4
00518	Clover Creek	M	10,050	1,354	4	92	15	0	4	115	0	435	0	Su,Fa	RR		1994	1,2,3,4
00519	Fish Creek	I	11,805	10,446	20	0	75	0	24	119	0	575	0	Sp,Su	RR		stds.	1,2,3,4
00520	Lynch-Flynn	I	18,800	4,260	50	0	30	0	5	85	0	882	0	Sp,Su	RR			1,2,3,4
00521	Priday Reservoir	M	780	720	120	0	5	0	19	144	0	65	35	Sp	Sp,Su			1,2,3,4
00522	Abert Seeding	M	9,200	320	55	0	0	0	5	60	0	2,619	0	Sp,Su,Fa,Wi	RR		1992	3,4
00523	Warner Lakes	I	38,788	5,650	40	0	0	0	10	50	0	1,138	86	Sp,Su,Fa,Wi	Wi			1,2,3,4
00524	Lane Individual	C	2,700	0	40	0	0	40	10	90	0	65	0	Sp,Su,Fa	Wi			3,4
00529	South Rabbit Hills	M	9,028	0	0	35	0	0	5	40	0	1,266	0	Sp,Wi	Sp		1993	1,2,3,4
00530	East Rabbit Hills	M	8,404	0	0	35	0	0	5	40	0	1,200	0	Sp,Wi	Sp		1993	
00531	North Rabbit Hills	M	11,712	640	0	35	0	0	5	40	0	1,317	0	Sp,Wi	Sp		1993	
00600	Beaty Butte	I	506,985	68,510	400	0	0	240	44	684	3,000/2,400	26,121	14,466		RR			1,2,3,4
00700	Silver Creek-Bridge Creek	I	6,645	265	50	0	60	0	19	129	0	303	343	Sp,Su	RR		1992	1,3,4
00701	Upper Bridge Creek	M	1,460	3,270	20	0	30	0	9	59	0	108	52	Sp,Fa	Sp,Fa			1,3,4
00702	Buck Creek-Bridge Creek	M	6,280	375	120	0	30	0	22	172	0	309	30	Sp,Su,Fa	RR			1,3,4
00703	Bear Creek	M	1,155	990	30	0	30	0	6	66	0	118	11	Wi	Wi			1,3,4
00704	Ward Lake	I	12,424	1,819	170	0	150	0	17	337	0	397	223	Sp	RR		1993	3,4
00705	Oatman Flat	I	28,503	6,075	730	0	150	0	28	908	0	2,082	623	Sp,Su	RR			3,4
00706	Rye Ranch	M	4,240	0	120	0	40	0	10	170	0	539	0	Sp,Su	DR			4
00707	Tuff Butte	M	9,330	2,310	320	0	180	0	20	520	0	536	0	Sp,Su	RR			4
00708	Arrow Gap	C	2,720	0	0	140	6	0	20	166	0	135	25	Sp,Su	Sp,Su			3,4
00709	Dead Indian-Duncan	I	18,790	0	620	0	150	0	27	797	0	586	112	Sp,Su	RR			3,4
00710	Murdock	I	4,468	1,668	60	0	60	0	12	132	0	545	160	Sp,Su	RR			3,4
00711	South Hayes Butte	I	1,490	0	10	0	60	0	7	77	0	88	50	Sp,Su,Fa	Sp,Fa			3,4
00712	Bridge Well	M	1,400	1,050	90	0	60	0	9	159	0	188	0	Sp	RR	1992	1990	3,4

Allotment number	Allotment name	MIC 1999	Public land acres	Other acres	Animal unit months (AUM's): Current deer/ pronghorn	Additional deer/ pronghorn	Additional elk	Additional bighorn sheep	Other wildlife	New wildlife total	Wild horse [1]	Livestock	SNU [2]	Period of use [3]	Grazing system [4]	AMP Date	Allotment evaluation	Management objective [5]
00713	Silver Creek	M	2,785	870	50	0	60	0	12	122	0	200	0	Sp	RR	1992	1990	3,4
00714	Table Rock	C	4,110	120	160	0	6	0	13	179	0	1	250		Ungrazed			3,4
00716	Silver Lake Lakebed	C	680	0	0	25	0	0	5	30	0	1	0	Wi	Wi			3,4
00900	Fremont	M	26,362	511	1,200	0	60	0	29	1289	0	1,970	0	Sp,Su,Fa	Sp,Su			3,4
00901	Wastina	M	6,366	0	300	0	40	0	11	351	0	419	0	Sp,Fa	DR			3,4
00902	Cinder Butte	M	10,776	320	600	0	40	0	34	674	0	891	0	Su,Fa,Wi	DR			3,4
00903	Beasley Lake	M	2,640	534	60	0	40	0	6	106	6	232	0	Sp,Su,Fa	Sp,Su			4
00904	Highway	M	2,420	989	80	0	40	0	11	131	0	118	0	Sp,Su,Fa,Wi	DR			4
00905	Homestead	M	12,877	9,728	500	0	40	0	8	548	0	685	0	Sp,Su,Fa,Wi	DR			3,4
00906	North Webster	M	1,071	3,416	40	0	40	0	11	91	0	112	0	Su,Fa	DR			3,4
00907	Devils Garden	M	4,406	0	100	0	600	30	16	746	0	0						3,4
00908	Cougar Mountain	M	8,282	3,405	520	0	40	20	14	594	0	616	0	Sp,Su,Fa,Wi	DR			3,4
00909	Button Springs	M	8,779	1,240	240	0	40	0	12	292	0	1,068	0	Sp,Su,Fa	DR			3,4
00910	Hogback Butte	M	4,384	4,234	170	0	40	0	12	222	0	680	0	Sp,Su,Fa	DR		1992	3,4
00911	Valley	M	6,120	769	120	0	30	0	17	167	0	613	0	Sp,Su,Fa	RR			4
00914	West Green Mountain	M	21,656	4,240	200	0	40	0	13	253	0	1,395	0	Sp,Su,Fa	DR	1984		4
00915	Squaw Butte	M	8,230	460	500	0	40	0	35	575	0	1000	0	Sp,Su,Fa	DR	1985		4
01000	Little Juniper Spring	I	116,836	780	440	0	0	0	40	480	0	5,418	0	Sp,Su,Fa	RR			1,2,3,4
01001	Alkali Winter	M	87,570	6,817	0	55	0	0	5	60	0	6,223	0	Fa,Wi	Wi		1990	3,4
01002	Bar 75 FRF	C	2,588	0	0	0	0	0	0	0	0	73	0	Sp,Su,Fa,Wi	Sp,Su			4
01072	South Butte Valley	M	3,710	0	0	0	0	0	0	0	0	900	0	Fa,Wi,Sp	Sp			4
01300	Becraft	C	120	0	3	0	0	0	2	5	0	10	0	Fa	Unk			4
01301	Crooked Creek	C	240	0	3	0	0	0	2	5	0	10	0	Sp,Su	Unk			4
01302	Thomas Creek	C	40	0	10	0	0	0	4	14	0	30	0	Su,Fa	Unk			4
01303	O'Keeffe	C	280	0	5	0	0	0	5	10	0	20	0	Sp,Su	Unk			4
01305	Schultz	C	200	0	10	0	0	0	4	14	0	29	0	Sp,Su,Fa	Unk			4
01306	Simms	M	363	0	20	0	0	0	7	27	0	55	0	Sp	Unk			4
																		4
Totals			3,027,890	285,674			3,131	1,825		22,081	4,440/3,420	164,128	25,807					

[1] Recommended forage allocation/present forage allocation. Adjustments from two allotments (#'s 400 and 426) outside the herd area which were incorrectly allocated forage for wild horses. Forage allocations are redistributed based on herd management area boundaries. Forage allocations are also increased to provide 12 months of forage for all horses at the top range of the appropriate management level (150 horses in the Paisley Herd Management Area, 250 horses in the Beaty Butte Herd Management Area).
[2] SNU = Suspended nonuse.
[3] Sp = Spring; Su = Summer; Fa = Fall; Wi = Winter.
[4] Grazing systems: RR = Rest rotation; S = Seasonal; D = Deferred; R = Rotational.
[5] Management objectives: 1 = Improve and/or maintain riparian vegetation; 2 = Improve water quality and quantity; 3 = Maintain and/or improve wildlife habitat; 4 = Maintain and/or improve ecosite condition.
[6] For Abert Rim, figure includes AUM's for 60 deer, 40 pronghorn, and 60 bighorn sheep.
[7] FRF = Federal range fenced; where small portions of Federal land are within fenced private lands; hence, grazing systems vary and are generally unknown.

Table 2-27.—*Animal unit months (AUM's) authorized annually from 1991 to 2000* [1]

Year	Animal unit months
1991	83,751
1992	79,603
1993	96,234
1994	106,823
1995	112,372
1996	123,009
1997	127,251
1998	114,609
1999	118,946
2000	118,739
Average	108,234

[1] Grazing year March 1 to February 28.

modification of the permit if it is determined that livestock grazing is contributing to the nonattainment of a standard.

Rangeland Projects

Various rangeland treatments, such as brush control and rangeland seeding, have been completed in the LRA. Structural improvements, fences, cattleguards, reservoirs, spring developments, wells, and pipelines have been constructed to facilitate livestock distribution and rangeland management (see the 1997 "Lakeview District Planning Update" www.or.blm.gov/Lakeview/planning). Nonnative seeding has occurred since the 1950s, with most activity occurring in the 1960s. Seedings have been implemented on a very limited scale from the 1970s to present. The original objective of rangeland seeding with nonnative species was to increase livestock forage. The development of various grazing systems resulted in seedings being used to rest or defer use of adjacent native vegetative communities. For the most part, seeding since the 1970s has been developed as a result of emergency fire rehabilitation on sites that were susceptible to erosion and the invasion of noxious weeds and nonnative annual grass species (such as cheatgrass). As summarized in the vegetation section, nonnative seedings encompass approximately 67,000 acres or 2.2 percent of the resource area.

As mandated in FLPMA and PRIA, a portion of the grazing fees is invested in range improvements with the expectation that these improvements may benefit wildlife, watersheds, and livestock producers. Through use of emergency fire rehabilitation funds, additional public land resources have been protected through rehabilitation of burned areas, thereby reducing soil loss and decreasing the ability of noxious weeds and annual nonnative grasses to become established. Livestock operators, state and Federal agencies, and other interested public entities have continued to fund rangeland improvement construction.

Allotment Categorization/Grazing Systems

Grazing systems were limited before the 1960s. In the mid-1960s, grazing systems were established to maintain or establish plant communities. Grazing systems have evolved to protect and maintain plant community diversity and the resource values on public land.

Three selective management categories are used to administer livestock grazing. All allotments were grouped into these categories according to management needs, resource conflicts, potential for improvement, and Bureau funding/manpower constraints.

Improve (I) category allotments: Are managed to improve current unsatisfactory resource conditions and will receive the highest priority for funding and management actions.

Maintain (M) category allotments: Are managed to maintain current satisfactory resource conditions and will be actively managed to ensure that resource values do not decline.

Table 2-28.—*Areas unallotted or excluded from livestock grazing*

Area	Acres
Unalloted [1]	124,800
Excluded	
Beaty Butte BLM/USFWS Highway 140 Exclosure [2]	9,516
Buck Creek	590
Fossil Lake	5,725
Table Rock	4,086
Warner Wetlands	31,355
Miscellaneous livestock exclusion areas [3]	5,818
Guano Creek WSA Cooperative Management Area	11,796
North half Diablo WSA [2]	53,648
West half Abert Rim WSA	9,766
Tucker Hill [2]	3,896
Alkali Lake	570
Subtotal	136,766
Total ungrazed area	261,566

[1] Includes most of Devils Garden, Four Craters, and Squaw Ridge WSA's; isolated parcels in the area of Christmas Valley and Lakeview; Crane Mountain; east half of Summer Lake; and Abert Lake.
[2] Where grazing is currently not allowed due to grazing agreements, a grazing decision is needed to officially exclude these areas from grazing.
[3] Areas include: small, unnamed stream, spring, reservoir, riparian, and other livestock exclosures.

Custodial (C) category allotments: Are managed custodially by the BLM to protect resource conditions and values. There are 28 Category I allotments, 62 Category M allotments, and 30 Category C allotments in the LRA.

The "Lakeview Grazing Environmental Impact Statement," subsequent rangeland program summaries, and Lakeview District planning updates have all outlined proposed grazing systems for all I and M allotments. As a result of land-use planning direction, grazing systems have been developed and implemented through agreements with allotees. These grazing systems are usually documented and described in an allotment management plan. An allotment management plan is a documented program, developed as an activity plan, that directs management of livestock grazing on specified public land in order to achieve objectives relating to desired resource conditions, sustained yield, multiple use, and economics (ranch). Allotment management plans are implemented when incorporated into term grazing permits or leases and accepted by the permittees or lessee. Strategic portions of allotment management plans are the rangeland projects designed to meet resource objectives and subsequent grazing systems/schedules. LRA has implemented allotment management plans on 9 I Category allotments and 16 M Category allotments. Grazing management has been developed for the remainder of the allotments by agreement or annual authorization. Appendix E1 displays allotment specific information.

Monitoring data collection tracks progress in meeting identified management objectives. Active grazing use authorizations and management actions in each allotment are periodically evaluated, based on the monitoring data. Adjustments are made by agreement or decision in accordance with legislation, regulations, and policy so that public land resources are maintained or improved. As allotment assessments are completed, allotments could be placed in different categories.

Range Condition

ICBEMP assessed the rangeland integrity of all the subbasins in the project area. "Measures of rangeland integrity include such elements as: (1) grazing influences on vegetation patterns and composition, (2) disruptions to the hydrologic regimes, (3) expansion of exotic species, (4) changes in fire severity and fre-

quency, (5) increases in bare soil, and (6) expansion of woodlands into herblands and shrublands." In the planning area, Summer Lake and Lake Abert Subbasins were rated as having low range integrity and the Warner Lakes and Guano Subbasins were rated as moderate range integrity (USDI-BLM and USDA-USFS 1996h). Appendix A2 contains a summary of the ICBEMP assessments applicable to the planning area.

The terms *ecological status* and *seral stage* are synonyms for range condition. Ecological site inventory data describes the condition of vegetative communities based on soil characteristics and potential natural vegetative community. Currently, ecological site inventory data is not available for the entire resource area. A description of the ecological site inventory process is contained in Appendix C2.

Wild Horses

Introduction

It is commonly believed that Spanish explorers reintroduced the horse to North America in the early 1500s. After that time, descendants of these horses became widespread across the West. Between 1880 and the 1930s, the number of wild horses in eastern Oregon increased rapidly as horses brought to this area by settlers, ranchers, and the U.S. Calvary escaped or were abandoned by their owners and joined wild horse herds. By the late 1940s, wild horse numbers were estimated at 2,500 to 3,000 in the LRA.

Local residents remember the 1950s as a period of intensified gathering throughout eastern Oregon, and as a result, horse populations were drastically reduced. By the late 1950s, fewer than 50 horses remained in the Beaty Butte area. No estimates were recorded for the Paisley area.

Public concern and outcry in the late 1960s influenced Congress to pass the "Wild Free-Roaming Horse and Burro Act" in 1971 (Public Law 92-195). The law provided for the protection, management, and control of wild horses and burros on public land. The Act defines "wild free-roaming horses and burros" as all unbranded and unclaimed horses and burros on public lands. Two herd areas have been managed in the LRA since 1971.

Federal protection and the absence of natural predators have resulted in an increase in the wild horse and burro populations. In 1973, the BLM began the Adopt-A-Horse or Burro Program. Under this program, excess wild horses and burros are removed from the range as a way to maintain healthy herds and protect the habitat. The animals are then offered for adoption to qualified adopters.

Herd Management Areas

Wild horses in the LRA are managed in two designated areas: Paisley Desert Herd Management Area and the Beaty Butte Herd Management Area (Map SMA-1). Part of the Paisley Desert Herd Management Area is unavailable to wild horses (see Map SMA-1). No wild horses have been seen in this area from 1973 to present. As a result of the Paisley adjudication agreements of 1986 and 1992, the 31,859 acre area was developed for livestock grazing, including seedings and division of the area into several pastures. The present fencing prevents horses from drifting into the area. The goal of the wild horse program is to keep horses within the herd management areas and to manage horse numbers at viable levels while maintaining the natural habitat in an ecological balance. Further information may be found in the Paisley Desert and Beaty Butte wild horse management plans.

Horses compete with livestock and wildlife for forage on the public lands. In order to prevent resource damage, BLM has established a limit for the amount of forage that may be taken from a given area. The vegetative resource is managed by dividing the available forage among competing uses in a forage allocation. Forage allocations for horses in each herd management area are based on the maximum number of adult horses in the appropriate management level range (based on an average population of about 80 percent adults and 20 percent foals). Herd sizes have been established based on available resources, reproductive rates, other range uses, and public input. Table 2-29 shows statistics for the two herd management areas.

Appropriate management levels, as well as the boundaries of each herd management area, were established through previous land use plans. Appropriate management levels are established to ensure that public land resources, including wild horse habitat, are maintained in satisfactory, healthy condition, and that unacceptable impacts to these resources are minimized. To date, the data gathered during herd area monitoring supports established appropriate management levels.

Herd areas are monitored each year through aerial and/or ground census. Data on the use of forage plants is collected annually. Determinations to gather the herds,

the number of horses to be removed, and when they are to be removed are based on these surveys. Table 2-30 shows census numbers for each herd management area since 1971.

Herd Gathers

Horses are usually allowed to run free until a herd reaches its maximum size, or monitoring data indicates a need to gather. Horses are also gathered if they stray outside the boundaries of the herd management area. The excess horses are gathered to prevent resource overuse and to keep the herd healthy. Generally, gathering is scheduled every 3 to 5 years, depending on reproductive rates, death rates, funding, public concern, and other special management considerations. Site-specific gathering details, including trap sites, are determined at the time of each gather. Temporary traps would be adjacent to existing roads and would remain in place for up to 7 days. Occasionally, temporary traps may be placed within wilderness study areas (WSA's) if no other reasonable location is within 10 miles of wild horses. Any placement in WSA's would have to be accessible on existing roads or ways.

The Paisley Desert and Beaty Butte herds have been gathered six times since 1971. Horses have historically strayed outside the herd management areas. Horses from the Beaty Butte herd move between the Burns District to the east and the Lakeview District and between the Sheldon and Hart Mountain National Wildlife Refuges. Horses from the Paisley Desert often move east and south into surrounding crested wheat-grass seedings.

Gathering is done outside the normal February through June breeding and foaling season. Usually, horses are gathered to reduce numbers to the lowest end of the appropriate management level range to avoid the need for frequent, expensive gathers that may disrupt the herd. Excess horses are usually transported to the Burns Wild Horse Corral for adoption by the public, but horses may go to other adoption sites throughout the United States. Table 2-31 shows the number of horses removed from each herd management area by gathers since 1977.

Fertility Control

Fertility control research using immunocontraceptives in mares may be conducted in either herd management area. A study of fertility control on the Beaty Butte herd was done in the late 1980s by the University of Minnesota. Dominate studs in the herd management area were gelded and released back to the herd management area.

Herd Quality and Genetics

Herds in both the Paisley Desert and Beaty Butte Herd Management Areas are in good condition; they exhibit few health problems.

Wild horses in these herds are managed first for quality and conformation and second for color. They come in all shapes and sizes. Adult horses average from 14 to 16 hands and weight 950 to 1,300 pounds.

There is a wide variety of genetic backgrounds among the horses in both herds. The colors of the original Paisley Desert horses were predominately solid colors of bay, brown, and sorrel. Presently, nearly every color can be found among the horses in the herd. In the southeast portion of the herd area, a few bands consist of horses in varying colors of gray. Others are buck-skin, palomino, or dun. Pintos were introduced into the area in 1980.

Historically, bloodlines appear to have been mainly thoroughbred with a few heavily-muscled horses, possibly of draft breeding. However, horses from outside the herd area have been introduced, and crossbreeding has occurred to the point that bloodlines are no longer pure. Table 2-32 shows characteristics of each herd.

The majority of the Beaty Butte horses are sorrels, browns, and roans. From appearance, bloodlines in the herd include draft horses, saddle-type riding horses, and thoroughbreds. One band of horses exhibits a few characteristics of the Spanish mustang, including small size, hooked ears, dun color, and dorsal stripe.

Special Management Areas

Areas of Critical Environmental Concern

Introduction

As a part of the preplanning process for the RMP, the LRA staff considered and evaluated all lands within the resource area for possible designation as ACEC and RNA. FLPMA and BLM policy (BLM 1987, 1988) require the BLM to give priority to designation and protection of ACEC's during the land use planning process.

Table 2-29.—*Herd management areas and herd areas in the Lakeview Resource Area*

Herd management areas	Public acres	Appropriate management level range	Forage allocation (AUM's) [1]
Paisley Desert [2]	303,526	60–110	1,020
Beaty Butte	438,773	100–250	2,400

[1] Animal unit months, based on a ratio of approximately 80% adults and 20% foals.
[2] The 31,859 acres of the Paisley Desert Herd Management Area is unoccupied by and unavailable to wild horses.

ACEC's are areas within the public lands where special management is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or natural systems or processes, or to protect life and safety from natural hazards. Appendix I contains a complete description of the ACEC criteria and the designation process.

Two ACEC/RNA's (Sand Dunes/Lost Forest/Fossil Lake ACEC/RNA and Devils Garden Lava Bed ACEC) were designated in previous land use plans. Another area was given protective management but was not designated (Connley Hills ACEC/RNA) (BLM 1982a; 1982b; 1983a; 1983b). Other areas were considered for potential ACEC designation in the "Lakeview Grazing Management Final Environmental Impact Statement" (BLM 1982a) but failed to meet the criteria. However, as a whole, the LRA was not evaluated at the time management framework plans were completed in the early 1980s. Since these plans were approved in 1983, two plan amendments have been completed, which designated the Warner Wetlands and Lake Abert ACEC's (BLM 1989; 1995). Existing ACEC's are shown on Map SMA-1.

Background

ACEC's may be nominated by BLM staff, other agencies, or members of the public at any time. In 1992, the BLM contracted with the Oregon Natural Heritage Program (ONHP) to conduct a survey to evaluate plant and animal community natural heritage cells represented within the resource area and to look at previous ACEC nominations. After reviewing the entire LRA, nine sites were recommended for designation for both ACEC and RNA status (Vander Schaff 1992), because they contained at least one ONHP plant community cell. Those recommendations, along with other nominations from the Oregon Natural Resources Council, various Native American Tribes, BLM staff, and Richard Miller (Oregon State University), were evaluated by the LRA staff, and the findings documented in the "Areas of Critical Environmental Concern Nomination Analysis Report" (BLM 2000) (copies of the complete report are available from the LRA Office or at the office's web site at www.blm.or.gov/Lakeview/planning).

BLM policy requires that RNA's be managed as ACEC's; therefore, areas nominated as RNA's must also meet the ACEC criteria. Nine RNA's have been proposed. RNA management goals and plans are usually more restrictive than ACEC management alone, as RNA's are created for scientific research and should guard values for the representative cells. Also, eight of the proposed ACEC's contain populations of Bureau-sensitive plant species. Appendix I contains a description of each existing and proposed ACEC and their relevant and important values.

Existing Areas of Critical Environmental Concern

At present there are four existing ACEC's in the LRA:

ACEC	Acres
Devils Garden	28,241
Lake Abert	50,117
Lost Forest RNA/Sand Dunes/Fossil Lake	36,120
Warner Wetlands	53,087
Total	167,565

The Sand Dunes/Fossil Lake/Lost Forest (RNA) ACEC is being analyzed to create management prescriptions for the area, as no management plan has yet been developed. Lake Abert ACEC is proposed for expansion to include land on top of the rim. Location of the existing ACEC's are shown on Map SMA-1 and are described in Appendix I.

Potential Areas of Critical Environmental Concern

The areas in Table 2-33 were nominated as ACEC/RNA's and were evaluated for potential designation as part of the preplanning process described above. The table shows the name of the proposed ACEC, the proposed acreage, and the values for which it was nominated. Maps SMA-2, -3, and -4 show the approximate location of the nominated areas.

Table 2-30.—*Paisley Desert and Beaty Butte Herd Management Area census summarys*

Paisley Desert Herd Management Area [1]			Beaty Butte Herd Management Area [2]		
Year	Total horses	Number of foals	Year	Total horses	Number of foals
1971	81	10	1971	190	44
1972	121	32	1972	271	69
1973	177	28	1973	365	25
1974	219	49	1974	482	110
1975	288	68	1975	611	117
1976	307	70	1976	762	176
1977 [3]	368		1977	879	189
1978	137	19	1978 [3]	273	44
1979	179	30	1979	305	54
1980	215	37	1980	419	91
1981 [3]	244	47	1981 [3]	441	85
1982	70	17	1982	249	49
1983	119	29	1983	291	52
1984	147	28	1984 [3]	382	56
1985	176	45	1985	167	33
1986 [3]	286		1986	233	37
1987 [5]	56		1987	250	35
1988	40 [6]	9	1988 [3]	260	42
1989	70	13	1989	150	29
1990	99	11	1990	154	25
1991	139	24	1991	250	59
1992 [3]	203		1992 [3]	312	62
1993	77		1993	77	18
1994	143	24	1994	118	20
1995 [3]	172		1995	142	
1996	103		1996	191	
1997	144		1997	283	35
1998	142 [4]		1998	393	75
1999	172		1999	474	

[1] Summary is for horses inside the herd management area. Inventory was done most years; however, during some years horse numbers are estimated based on an average of 20 percent increase per year.
[2] Most years, horses were inventoried by flying over the herd area; however, during some years, horse numbers are estimated based on an average 20 percent increase per year. Variability in inventory numbers is from horses moving in and out of the herd area into and out of Sheldon and Hart Mountain Wildlife Refuges and into and out of the Burns District.
[3] Year horses were gathered.
[4] Partial inventory.
[5] Year horses were introduced.
[6] Mortality: 12 horses strayed outside the herd management area and died from dehydration in an area with no natural water sources.

Table I-1 (in Appendix I) shows 11 potential ACEC's which were considered but did not meet the relevance and importance criteria. As a result of the evaluation, it was determined that the proposed areas met the relevance and importance criteria required of potential ACEC's. The need for special management of these areas will be determined in this document.

Table 2-31.—*Paisley Desert and Beaty Butte Herd Management Area gathers*

Year	Number of horses in HMA	Number of horses removed
Paisley Desert Herd Management Area		
1977	368	235
1981	244	183
1986	286	238
1992	203	105
1995	172	82
2000	411	351
Beaty Butte Herd Management Area		
1977–78	879	776
1981	419	272
1984	382	260
1988	260	186
1992	250	162
1999	472	283

Table 2-32.—*Characteristics representative to each wild horse herd*

Herd	Color/Type	Markings	Size	Weight
Paisley Desert	Any color, especially pinto, buckskin, dun, gruella, and grey/saddle type	N/A	14–16 hands	950–1,300 lbs
Beaty Butte	Any color, especially red or blue roan, and grey/saddle type; dun, gruella, buckskin, claybank, and variations/Spanish mustang type	Dorsal stripes	13–16 hands	750–1,300 lbs

Wilderness Study Areas

Under section 603 of FLPMA, the BLM was required to complete a wilderness review of public land in Oregon. Based on an inventory and study of the public lands within the LRA in the 1980s, 12 WSA's were recommended in 1989 for possible designation as wilderness by Congress. Until Congress acts on the wilderness recommendations or otherwise releases WSA's for other purposes, WSA's are managed in accordance with BLM's 1995 "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP). As mandated by section 603(c) of FLPMA, these WSA's will be managed in a manner which will not impair their suitability for preservation as wilderness.

Each of the WSA's within the LRA have the minimum characteristics necessary to qualify for wilderness consideration. These characteristics include containing 5,000 acres (or more) of contiguous BLM land, are roadless islands of any size, are roadless areas of sufficient size to make practical their preservation and use in an unimpaired condition, and possess outstanding opportunities for solitude or for primitive and unconfined types of recreation. Many of the WSA's contain special features, such as unique or sensitive plant and animal species and communities, interesting geologic features, cultural or paleontological resources, or other features of scientific, educational, scenic, or historic value.

A brief description of the location, number of acres recommended and not recommended for wilderness designation, and a summary of the criteria considered in developing the suitability recommendations for each WSA is contained in Appendix J2. Table 2-34 lists each of the WSA's and the number of acres recommended or not recommended for wilderness designation. The WSA's are shown on Map R-1. The Basque Hills and Rincon WSA's straddle the Lakeview/Burns District boundary, and are managed by the Burns District. Complete descriptions of these WSA's can be found in the 1989 "Oregon Wilderness Environmental

Impact Statement." Acreages listed in Table 2-34 are only those located within the LRA. These acreages are based on the most up-to-date geographic information system measurements and, therefore, may differ from those in the "Oregon Wilderness Environmental Impact Statement." These changes do not represent a change in boundaries.

Since 1992, when the wilderness recommendations were submitted to Congress, 3,139 acres of land adjacent to or within WSA's (Fish Creek Rim, Abert Rim, and Guano Creek) have been acquired through land exchanges and donations.

Wild and Scenic Rivers

Introduction

As a Federal land management agency, BLM is an active participant in managing designated wild, scenic, and recreation rivers, and in contributing to the eligibility, classification, and suitability studies of rivers listed in the "Nationwide Rivers Inventory" and other potential rivers. Other potential rivers are those identified by congressional bills, BLM, or the public which might meet the qualifications for wild, scenic, or recreation river designation, but which have not been formally considered.

To be eligible for inclusion in the national WSR system, a river must be free flowing and have at least one outstandingly remarkable river-related value within its immediate environment (usually a 0.25-mile corridor along each side of the river).

Existing Conditions

Currently, there are no rivers within the LRA that are designated or listed in the "Nationwide Rivers Inventory." The following rivers in adjacent areas have been designated: the Sycan River and North Fork of the Sprague River in the Fremont National Forest, the Donner und Blitzen River in BLM's Burns District, the North and South Forks of the Owyhee in BLM's Vale District, the Malheur River in the Malheur National Forest, and the Klamath River in Lakeview BLM's Klamath Falls Resource Area.

In 1982, the Chewaucan River was evaluated by the Fremont National Forest to determine if the river was eligible for inclusion into the national WSR system. This evaluation was coordinated with BLM's Lakeview District, since 4 miles of the river runs through BLM-administered lands. The report found that the Chewaucan River did not meet the minimum eligibility criteria of having outstandingly remarkable values. Furthermore, it stated that the mixed land ownership within the river corridor would create problems in formulating a coherent management plan for the entire river corridor.

Another joint eligibility assessment between the BLM and Fremont National Forest came about from a 1989 appeal of the "Fremont National Forest Resource Management Plan." In an effort to resolve the appeal, the USFS agreed to assess the eligibility of five rivers: Deep Creek, Honey Creek, Little Honey Creek (all of which flowed through both BLM- and USFS-administered land), Dairy Creek, and the South Fork of the Sprague River (which flows through USFS-administered land). In these coordinated efforts, the only BLM-administered river stretch found to be eligible was Honey Creek.

In preparation for this RMP, an evaluation of the remaining streams in the LRA was conducted during 1997 and 1998. An interdisciplinary team evaluated all possible drainages which were known to be perennial or intermittent, along with many springs, lakes, and drainages whose character was unknown. From this list, it was determined which streams were free-flowing and if they had any outstandingly remarkable values. It was determined that two rivers were eligible for further study: Guano Creek and Twelvemile Creek. These creeks were tentatively classified concerning their degree of naturalness.

Table 2-35 lists the eligible creeks and their classification; Map R-8 shows their locations.

Guano Creek Wilderness Study Area Cooperative Management Area

This area consists of about 11,020 acres of the Guano Creek WSA (about 94 percent of the total area) (Map SMA-1) immediately south of Hart Mountain National Antelope Refuge. This area is currently managed in accordance with the "Hart Mountain National Antelope Refuge Comprehensive Management Plan" (USFWS 1994a; 1994b), the draft plan amendment/environmental assessment prepared jointly by the USFWS and BLM (1998a; 1998b), the "Oregon Public Lands Transfer and Protection Act" of 1998, and the wilderness IMP (BLM 1995). No livestock grazing is allowed. The use of prescribed burning is emphasized to restore native vegetation communities. Management emphasis is for wildlife habitat values.

Table 2-33.—*Areas nominated for ACEC designation*

Name of proposed ACEC	Acreage evaluated	Resource values (relevance/importance) [1]
Connley Hills RNA	3,599	*Botanical and ecological values:* Essential habitat of species diversity. Unique plant communities limited to this site in Oregon. Fills ONHP cells for Basin and Range Ecosystem: (4) western juniper, big sagebrush, bluebunch wheatgrass, (7) western juniper, bluebunch wheatgrass, (8) western juniper, Idaho fescue community, (11) big sagebrush, blueunch wheatgrass community. Outstanding archaeological values.
Sink Lakes RNA	2,322	*Botanical and ecological values:* Low elevation vernal pool and sagebrush/sandberg bluegrass scabland. Fills ONHP cells for Basin and Range Ecosystems: (24) low sagebrush, Sandbergs bluegrass scabland (terrestrial system), (12) low elevation vernal pond (aquatic ecosystem).
Guano Creek RNA	2,614	*Botanical and ecological values:* Fills ONHP cell for Basin and Range Ecosystems: (15) big sagebrush, needle-and-thread community. Two Bureau sensitive plants in area. Cultural plants present.
Hawksie-Walksie RNA (formerly Hawk Mountain I and II)	17,340	*Botanical and ecological values:* Outstanding example of biodiversity of high desert grassland steppe. Fills ONHP cell for Basin and Range Ecosystems: (11) big sagebrush, bluebunch wheatgrass, (12) big sagebrush, Idaho fescue communities . Cultural and archaeological significance. Evidence of long-term relationship of Tribal People and landscape.
High Lakes	40,095	*Cultural and botanical values:* High concentration of rock art sites up to 7,000 years old. Diversity of plants and animals, especially cultural plants. Bureau sensitive plant found in area. Evidence of long-term relationship of Tribal People and landscape. May be eligible for traditional cultural property designation. Critical greater sage-grouse habitat.
Fish Creek Rim RNA	8,725	*Cultural and botanical values:* High density of significant sites in upland environment. Significant plant species diversity; fills ONHP cells in Basin and Range Ecosystems: (18) big sagebrush-bitterbrush, Idaho fescue, (22) low sagebrush, Idaho fescue scabland, (33) mountain mahogany, mountain big sagebrush, and where possible, bitterbrush, (35) snowbrush and bittercherry shrub complex. Two Bureau sensitive plants.
Spanish Lake RNA	4,699	*Botanical values:* Diversity of salt desert scrub communities with limited distribution in LRA and Northern Great Basin. Meets ONHP cell for Basin and Range Ecosystems: (33) black greasewood-shadscale/bunchgrass playa margin vegetation, (73) playa with greasewood and Great Basin wildrye (aquatic ecosystem).
Rahilley-Gravelly RNA	20,127	*Cultural and botanical values:* High density and variety of significant cultural sites. Plant gathering area for Northzern Paiute. May qualify as a traditional cultural property. Presence of Bureau sensitive plant species. Meets ONHP cell needs for Basin and Range Ecosystems: (6) western juniper, big sagebrush-bitterbrush community. Critical greater sage-grouse habitat.
Foley Lake RNA	2,747	*Cultural and botanical values:* Significant cultural sites related to resource procurement, settlement patterns, and religious practices. Important species diversify and presence of Bureau sensitive plant species. Meets ONHP cell for Basin and Range Ecosystems: (26) black sagebrush, bunchgrass community complex.
Table Rock	5,139	*Cultural, botanical, and scenic values:* High density of unique site types. Presence of two Bureau sensitive plant species; also old growth western juniper. May qualify as a traditional cultural property. Visual, recreation values.

Name of proposed ACEC	Acreage evaluated	Resource values (relevance/importance) [1]
Black Hills RNA	3,048	*Botanical values:* Ash plant community; ecological diverse western juniper community, age classes, with disjunct pine community. Two Bureau sensitive plants. Meets ONHP cell for Basin and Range Ecosystems: (4) western juniper/big sagebrush/bluebunch wheatgrass, (1) Wyoming big sagebrush/bluebunch wheatgrass.
Red Knoll (formerly Tucker Hill)	11,588	*Cultural and geological values:* High density and wide variety of sites important for research and traditional cultural values. Presence of ancient beach erosion terraces. Unique plant community containing a Bureau sensitive plant species. Critical greater sage-grouse habitat.
Abert Rim	18,028	Cultural and biodiverse plant communities; high in cultural plants.
Juniper Mountain RNA	6,335	*Botanical values:* Old growth western juniper and high species diversity. Meets ONHP cell description: (5) western juniper, big sagebrush, Idaho fescue.
Total	146,407	

[1] See Appendix I for detailed descriptions of ACEC values including plants and cell descriptions.

Table 2-34.—*Wilderness study areas and instant study areas*

Name of area (WSA number)	Total acres within WSA [1]	Acres recommended for wilderness designation [2]	Acres not recommended for wilderness designation [2]
Devils Garden Lava Bed (OR-1-2)	28,241	28,160	1,520
Squaw Ridge Lava Bed (OR-1-3)	28,684	21,010	7,330
Four Craters Lava Bed (OR-1-22)	12,472	9,100	3,500
Sand Dunes (OR-1-24)	16,495	0	16,440
Lost Forest ISA	9,047	0	8,000
Diablo Mountain (OR-1-58)	118,799	90,050	23,070
Orejana Canyon (OR-1-78)	24,210	14,800	9,800
Abert Rim (OR-1-101)	25,129	23,280	0
Fish Creek Rim (OR-1-117)	19,146	11,920	4,770
Guano Creek (OR-1-132)	10,591	10,350	0
Spaulding (OR-1-139)	68,589	0	69,530
Hawk Mountain (OR-1-146A)	45,604	69,640	0
Sage Hen Hills (OR-1-146B)	7,988	0	8,520
Basque Hills (OR-2-84) [3]	68,368	0	68,368
Rincon (OR-2-82) [3]	3,510	0	3,510
Total	486,873	278,310	208,563

[1] Acreage based on geographic information systems data (2001).
[2] Acres recommended and not recommended for wilderness designation are taken from the "Oregon Wilderness Final Environmental Impact Statement" (1989); these acres may not equal totals shown, since totals are based on more accurate geographic information system data (changes are not the result of any boundary changes).
[3] These WSA's are managed by the Burns District; acreages listed are only those located within the LRA.

Significant Caves

Introduction

The "Federal Cave Resources Protection Act" of 1988 declared that significant caves are an invaluable and irreplaceable part of the Nation's natural heritage, and directed Federal agencies to secure, protect, and preserve significant caves for the perpetual use, enjoyment, and benefit of all people. The "Federal Cave Resources Protection Act" also directed Federal agencies to prepare and maintain a list of significant caves, and to establish criteria for the identification of significant caves on Federal lands. The resulting cave management regulations were published in the *Federal Register* in 1993. Until caves within the LRA are evaluated to determine significance and management plans are prepared which provide specific management prescriptions, all caves are to be managed in accordance with BLM's "Oregon and Washington Interim Cave Management Policy." This policy provides for specific protective management of all caves and cave resources until a specific management plan is prepared. Many of the known caves within the LRA are also located in WSA's and these caves are afforded added protection under the wilderness IMP.

For a cave on public lands to be nominated, it must possess one or more of the following values: biota, cultural, geologic/mineralogic/paleontologic, hydrologic, recreational, or educational. The listing of significant caves involves two separate processes. During 1995, the initial listing process was coordinated by a national interagency effort in consultation with individuals and organizations interested in cave resources. This process had three steps: (1) nomination, (2) evaluation, and (3) listing.

Existing Conditions

There are presently seven significant caves located within the LRA. Dependent on funding and staffing levels, management plans for any known significant caves would be completed in fiscal year 2003. As part of the evaluation process, interested individuals and organizations would be consulted as allowed within the parameters of the confidentiality provisions set in 43 CFR, Subpart B, Section 37.12. During the initial listing in 1995, nine caves were nominated by the Willamette Valley Grotto. Seven of these caves were found to be significant and are protected under interim management of the "Federal Cave Resources Protection Act." A subsequent listing of 62 caves was received in late 1995. Seventeen of these were eliminated from further review because they were duplicates of the first list, were on private land, or did not meet the definition of a "cave." Forty-five caves need to be field checked before a determination on listing can be made. Dependent on funding and staffing levels, the inventory and evaluation process would be completed within 5 years after the completion of the resource management plan for the LRA. After the inventory and evaluation process has been completed within the LRA, a management plan for all new caves determined to be significant would be developed. This process would include public involvement. Because a separate management plan would be developed outside of this planning effort, caves will not be addressed further in this document.

Cultural and Paleontological Resources

Introduction

When the first Europeans came through this part of Oregon, four Native American Tribes were the primary occupants or visitors in what is now the planning area. The Northern Paiute occupied most of the area. The Yahuskin Band of the Northern Paiute occupied the north around Silver Lake, Christmas Valley, and Summer Lake, while the Fort Bidwell and Harney Valley Bands lived in the eastern and southeastern portions. Native people from the Warm Springs area to the north and Klamath and Modoc from the west would have also used portions of the resource area. It is unclear what Tribe or Tribes held the territory on a consistent basis during precontact periods. Evidence in the archaeological record and the ethnographic record indicates that, as in more recent time periods, groups moved, changed, or vacated the land. What is known is that indigenous people have lived in what is now the resource area for more than 12,000 years. Today's borders and boundaries for historic ethnic groups are a product of Federal and State government politics rather than of Tribal selection.

The resource area's archaeological record is one of the richest in the Nation in terms of site numbers and age. Evidence, reflected in the tools and other man-made materials, exists in the LRA for some of the earliest occupation in North America. These periods of occupation or cultural periods are determined by the types of points found on spears or arrows. The Clovis Period, presently the earliest described cultural period in North America, dates from about 12,000 to 10,000

Table 2-35.—*Summary description of drainages found to be eligible for wild and scenic river designation*

River	Segment description	Total segment length (miles)	Total BLM acreage
Guano Creek	Western boundary of Guano Creek WSA to BLM Road 6106A	11.6	2,992
Twelvemile Creek	California border to confluence with Twentymile Creek (includes BLM Surprise Field Office)	6.6	2,206
Honey Creek	Near confluence with Snyder Creek to one mile west of junction with County Road 3-10.	5.6	1,243
Total		23.8	6,441

years ago. Following the Clovis Period, the Stemmed Point Period was present from about 10,000 to 7,500 years ago. Following this was the Desert Culture Period, which lasted until the period of the historic Tribes of the area and contact with Europeans.

Archaeological or cultural sites range from small lithic scatters (areas of stone tool debris) of only a few flakes to large lithic workshops at quarry locations that cover many square miles. There are village locations, small temporary campsites, hunting stations, hunting blinds, game drives, rock art, spiritual sites, burial and cremation sites, and collecting sites present within the resource area. Areas where water is located and where resources, such as food plants and stone for toolmaking, can be found are the main locations of these sites. Within the site areas, places of traditional cultural use are present and can be identified.

Traditional Cultural Properties, National Register Sites, and Cultural Resources

Federal agencies are responsible for the management and protection of cultural resources on lands under their administration. This management and protection must be done in coordination and consultation with Native American Tribes who are connected with the land. Through a group of laws beginning with the "Antiquities Act" of 1906, FLPMA, the "Archaeological Resources Protection Act," NEPA, and the "Historic Preservation Act" (1966, as amended in 1992), the BLM has been mandated to identify, protect, and manage cultural resources on BLM-administered lands. A number of procedures, including those specified in 36 CFR 800.4(a), are used to identify cultural resources within the planning unit. In most cases, the BLM avoids cultural sites and does not subject them to mitigation. If avoidance is not possible, appropriate mitigation procedures are worked out in coordination with Native Tribes and the State Historic Preservation Office and Advisory Council on Historic Preservation. Wherever possible and practical, site protection is provided through law enforcement patrols, site monitoring, and site stewardship programs.

Traditional Cultural Property

A traditional cultural property is a place that is eligible for inclusion in the National Register of Historic Places (NRHP) because of association with cultural practices or beliefs of a living community that (1) are rooted in that community's history, and (2) are important to maintaining the continuing cultural identity of the community. Within the LRA, several such cultural sites have been identified through consultation with Tribal governments of the region. While these areas have been identified, they have not yet been listed on the NRHP and, as such, are considered potential traditional cultural properties. The identified potential traditional cultural properties are not considered to be all-inclusive, however. As projects in the region are proposed, new traditional cultural properties may be identified. This is because Tribal members are often unwilling to identify places which they are using unless identification is absolutely necessary to protect the area from destruction or other use. Many practices conducted at such sites require that the performance be done in private, without the knowledge of outsiders. In addition, public identification of such locations creates a potential problem in that these sites may be subsequently used for non-Native practices.

The majority of the identified traditional cultural properties are currently under consideration for designation as ACEC's for future management and protection.

National Register Sites

National register sites are sites (which may include traditional cultural properties) which have been determined to be eligible for inclusion on the NRHP. Eligibility is determined on criteria established by the 1966 "National Historic Preservation Act." Sites are

unique, provide information important to the study of history or prehistory, and are connected to important events or important persons.

Abert Rim National Register District and Potential Traditional Cultural Property

The Abert Rim area contains a National Register District for cultural resources. This National Register District is shown on Map SMA-1. Nomination of the district was based on the presence of large numbers of house pits, stone house rings, lithic scatters, plant processing areas, rock art, and other cultural features. The Abert Rim area has one of the highest site densities within the Northern Great Basin, and sites cover all time periods of the archaeological record. The area is important to members of the Northern Paiute for plant gathering, protection of the archaeological sites, and continuation of cultural practices which may be performed in the area. For these reasons, the area has potential to be designated a traditional cultural property. This area is further described in the ACEC section and shown on Maps SMA-3 and -4 as the proposed Abert Rim ACEC.

Management concerns for the Abert Rim Area are:

- Continued improvement of the U.S. Highway 395 would most likely further disturb archeological sites within the right-of-way. While mitigation of the archaeological content of these sites would be performed, it is likely the sites will be destroyed.
- Degradation and inappropriate use of cultural features which are important to the Native Peoples of the area could occur if these features become widely known.
- The Tribes have expressed a concern for both known and unknown Native American burial sites located within the area and for plant resources in the upland portions of the rim and would like these burial sites and plants protected.

Greaser Petroglyph National Register Site

This site is a large boulder located on the eastern side of Warner Valley. Petroglyphs and some pictographs have been created on the surface of the rock. These ancient designs are between 500 and 6,500 years old.

Management concerns for Greaser Petroglyph Site are:

- In the past, vandals have attempted to remove those portions of the boulder containing designs.
- The rock has been vandalized–there are scratches on its surface.
- The boulder is fractured and portions of it have fallen away or have been removed from the site.

Picture Rock Pass National Register Petroglyph Site

This is a series of boulders in the pass that contain rock art. In addition, other cultural sites, such as lithic scatters and campsites, are present in the area, along with archaeological sites. The designs on the boulders are from 500 to 1,500 years in age.

Management concerns for the Picture Rock Pass area are:

- The rock art at the site has been subjected to some vandalism.
- Digging, in what can only be assumed to be an attempt to look for buried artifacts, has occurred in the area of the boulder containing the rock art.
- Some new-age rock art has been placed at the site.
- Tours of the area are encouraged by local businesses.

High Lakes Potential National Register and Traditional Cultural Property Area

The High Lakes Area contains one of the largest concentrations of rock art in North America, as well as lithic scatters (stone tool debris), village locations, temporary campsites, plant collecting/processing sites, burial sites, and rock quarries of archaeological value (Maps SMA-3 and -4). The oldest dated rock art site in North America is located in this region. The area shows evidence of having been a major plant gathering and occupation region for more than 10,000 years. Plants which were gathered in the area in antiquity are still present in the area for collection by Northern Paiute. The Northern Paiute Tribes of the region have expressed great interest and concern for the proper management and use of the archaeological and plant resources of the area. The existing management framework plan identifies this area for special management. The High Lakes area is shown on Maps SMA-3 and -4.

Management concerns for the High Lakes Area area:

- The protection of the rock art sites in the area continues to be of concern.

- Site vandalism is an increasing problem.

- In addition, the sites are being used in ways which conflict with Native American values. Examples are New Age religious practices, modification with chalk for photos, building of campfires against them, destruction of the sites during suspected devil worship, and non-Native use for financial gain.

- The commercial visitation of such sites is increasing their rate of deterioration. Artifact collecting is a problem, up to and including the removal of the rock art with rock saws.

- Concern has been expressed by the Tribal groups that competing use of the plant resources could lead to a reduction in plants, making traditional uses difficult.

Rahilly-Gravelly Potential Traditional Cultural Property Area

This is an area containing cultural resource sites. Here, the Northern Paiute gathers plants that are culturally important. This area is shown on Maps SMA-3 and -4. Site types in the area include rock art, stone rings, lithic scatters, and hunting stations. Obsidian quarry areas are also found in the area. The location shows evidence of having been a focal point of plant collection and occupation for more than 8,000 years. Within this same area, yampa or ipos, a root plant used for food, can be found and collected in abundance most years. This plant is important in the maintenance of Native American traditions.

Management concerns for the Rahilly-Gravelly Traditional Cultural Property Area are:

- Native Tribes have expressed concern that the quality of the plants around Rahilly-Gravelly should be maintained or improved.

- Sites within the area are subject to illegal artifact collection.

- The rock art in the area is subject to vandalism and theft. In some locations, attempts have been made to remove the rock art by cutting it off the rock.

- There is concern that competing uses for collection of the plants could become a problem.

Tucker Hill Traditional Cultural Property Area

The plants and features of Tucker Hill are critical for the continuation of the Northern Paiute's cultural practices. The area also contains numerous archaeological sites. This area is shown on Maps SMA-3 and -4.

Management concerns for the Tucker Hill Traditional Cultural Property Area are:

- There has been mining in the north end of the Tucker Hill formation. Within the proposed area, mining is incompatible with the cultural values that need to be protected.

- Artifacts have been illegally removed from the area.

Table Rock Traditional Cultural Property Area

Through consultation with Tribal leaders, BLM has identified the area around Table Rock as significant to the Klamath Tribes (Maps SMA-3 and -4). The location contains numerous archaeological materials as well as features of a cultural nature, which are important to the Klamath Tribes and the Northern Paiute. Some locations on the formation have been found to contain burials, making this formation a sensitive area for local Tribes.

Management Concerns for the Table Rock Traditional Cultural Property Area are:

- The Table Rock area is one of the highest formations in the Christmas Valley/Fort Rock area. It has been used for many years as a communication site. A road and power line were constructed up the side of the formation in the early 1960s to provide access and power to the site. Construction of the original buildings and towers on the top reportedly destroyed a number of features. The site continues to be used for communications.

- On several occasions in recent years, additional structures and towers have been added to the location. These are considered addition impacts upon the cultural features of the area.

- The collection of artifacts and improper use of cultural features is aided by the presence of the

road to the top of the formation.

Cultural Plant Species

Through treaties with the Federal government and regulatory acts signed over the past 30 years, Indian nations have reserved rights and recognized interests to harvest a broad range of native plant and animal species from the public lands (USDI-BLM 1995g; Housley and Hanes 1998). Therefore, sustainable harvest levels of the various species should be a management goal. Indian governments consider availability of these species a trust responsibility of the Federal government. Inadequate quantities can lead to substantial effects on community well-being, because numerous social activities center on the harvest, preparation, and consumption of the resources. This involves both the occurrence of and access to the relevant resources. The occurrence of culturally important plant species may be measured through linkage with existing dominant overstory categories or associated soil types. Degree of access is determined by judging the potential effects that a number of anticipated impediments may be posed by differing management actions.

Cultural Plant Ethno-Habitats

Cultural plants are defined as those plants important to Tribal groups, both past and present, for subsistence, economic, and ceremonial purposes. Ethno-habitats are plant habitats defined by Tribal people as having human importance. Various historical factors since European contact have affected the availability of cultural plants for Tribal use within the planning area. The invasion of noxious weeds; the exclusion of fire; and impacts from grazing, timber harvest, and road building, among other factors, have all contributed to declines and dislocations in many of the plant species important to Tribes within the interior Columbia Basin (Hanes 1999). There is great concern by Tribal peoples, anthropologists, botanists, and some Federal land managers to protect the habitats where cultural plants are located. ICBEMP concludes that: "Tribal plants occurring in nonforested habitats are most at risk for decreases in habitat that may influence continued harvestability." Nonforested habitats include low sagebrush scablands (Croft and Helliwell 1998).

Table 2-36 shows the more important cultural plants found in the planning area, and Table 2-37 shows ethno-habitats. Some areas have been identified, which have large populations or large number of species of cultural plants concentrated in relatively small areas. These areas have been proposed as ACEC's.

Plants of considerable importance occur in the low sagebrush "lithic soils" habitat of BLM lands. Today, such plants as biscuit root (*Lomatium* species), wild onion (*Allium* species), bitterroot (*Lewisia rediviva*), yellow bell (*Fritilleria pudica*), balsamroot (*Balsamorhiza* species), and yampa or epos (*Perideridia* species) are important to the maintenance of indigenous cultures through ceremonies and other cultural activities. These plants were once critical to the very survival of the Tribe. In the spring, while Tribal peoples were at the root camps located on lithic soils, the women dug roots and gathered plants, and the men hunted greater sage-grouse hens and other game (Kelly 1932).

The ethno-habitat described as "wet meadows" is another plant community in need of special management concerns. Camas (*Camassia quamash*), tobacco root (*Valeriana edulis*), bistort (*Polygonum bistoides*), and wapato (*Sagittaria latifolia*) are cultural plants of concern that grow in wet meadows. Livestock overgrazing has caused stream cutting and consequent lowering of the watertable followed by loss of the plant habitat. Wapato in the Chewaucan wetlands was a major food source for Tribal People at the time of contact with white man. Today, much of the Chewaucan wetlands is under private ownership. The marsh has been channelized, drained, and is managed for hay production. Today, very little wapato is found in the area because of habitat loss.

Paleontological Resources (Prehistory)

Paleontological resources are the fossil remains of plants and animals. These animals and plants may be either extinct or extant today in the resource area or elsewhere. Within the resource area, there are several areas which are known to contain plant and animal fossil remains.

Fossil Lake

Fossil Lake, in northern Lake County, is currently part of a larger RNA/ACEC area known as the Fossil Lake/ Sand Dunes/Lost Forest RNA/ACEC. This ACEC was created to protect fragile and rare fossils, manage the Sand Dunes of the area, and protect an isolated island of ponderosa pine or disjunct forest. Within the Fossil Lake portion of the ACEC, considerable research, starting with Smithsonian work in the late 1800s, has been conducted. Each year for the past 12 years, the BLM has worked cooperatively with the South Dakota

School of Mines to conduct paleontological research and salvage fossils in the area. A large collection of materials resulting from this work is housed cooperatively at the South Dakota School of Mines in Rapid City, South Dakota. It is maintained, curated, and made available for study. Other collections are located at the Smithsonian and University of California at Los Angeles.

Fossil Lake is a small, dry lakebed in the approximate center of a large fossil-bearing deposit located in the Christmas Valley/Fort Rock Basin. The area covers nearly 10,000 acres of known fossil-bearing deposits. The full extent of the remains has not been determined. The fossil deposits are of the Holocene Epic, ranging from about 50,000 to 8,000 years before the present. The fossils overlap to some extent with cultural deposits of the 12,000-to-8,000-year before present period. There is some indication of hunting in this area during this time period. It is also possible that there was hunting of extinct game such as mammoth, sloth, camel, and bison. The area is extremely rich in mammal, bird, and fish fossils. It has been determined that there are several rock layers, each of which represents a different time period and each containing a different assortment of fauna. Fossil Lake is the type site for many North American Holocene Age (recent) fossils. It is reported to be the richest site for fossils from this era outside of the Labraya Tar Pits in California.

Fossil Lake is an actively eroding basin. Because the sediments are mostly volcanic in nature and are loose and unconsolidated, they erode easily. Wind storms sweep the basin and remove large amounts of sediment and carry it away. Some of this material is deposited in the active sand dunes, which are a part of the ACEC. Each year, because of this erosion, new fossils are exposed on the surface. Often these remains are still partly articulated (segmented). If they are not collected, these remains become weathered and scattered, causing them to lose much of their scientific interest.

To help protect the fossils, which are extremely fragile when exposed on the surface, an area of 6,660 acres was closed to off-highway vehicle use (OHV) use in the early 1970s. Livestock were removed from the area, and it is now fenced to prevent vehicle and further livestock entry. Currently, only foot traffic is allowed within the closure area.

Management concerns for Fossil Lake are:

- The Fossil Lake deposits are subjected each year to heavy erosion. This causes the fossils to be exposed on the surface of the ground where they are weathered and scattered, causing a loss of their scientific value.
- The area of the deposits is not fully included in the area of vehicular and livestock closure. Large areas of significant fossils can be found within the area primarily to the east in the sand dunes. These areas are open to use by dune buggies and other OHV's, which destroy fragile fossils like articulated fish fossils.
- The area is also subjected to illegal fossil collecting by collectors and commercial venders.

Simontacchi Camel Location

This location was discovered in 1997 by the BLM and reported to the paleontological community for study. Since that time, it has been examined by the South Dakota School of Mines paleontologists. This location contains large amounts of camel and other vertebrate fauna. It is important because of the large number of camel remains present in the deposits. This location, in loose, ashy deposits, is a series of small knolls with draws between them. Fossils have been and are continuing to be exposed on the surface by both wind and water erosion. Once exposed on the surface, these fossils are subject to weathering and scattering by erosional forces.

Management concerns for the Simontacchi Camel location are:

- There is a need for the continued collection of exposed remains. Currently, the South Dakota School of Mines devotes only 1 or 2 days per year to collecting and curating fossils from this location. This work is not adequate to properly find, collect, and curate the fossils eroding from the deposits. Collections could be made more frequently and for a longer period for each gathering than is currently being done.

Rattlesnake Butte Formations

The Rattlesnake Butte Formations, located within the Beaty Butte region of the LRA, were identified by the USGS. Like Fossil Lake, their full extent and faunal content have not been determined. The fossil deposits are a tan/brown volcanic tuff, which is exposed in many locations throughout the region. Fossils here are of the Miocene age, dating from 5 million to 23 million years in age. Remains include rhinoceros, elephant,

Table 2-36.—*Native American cultural plants of the planning area*

Common name	Scientific name	Habitat
balsamroot	*Balsamorhiza* spp.	Dry hillsides
biscuit root	*Lomatium* spp.	Lithic soils
bitterroot	*Lewisia rediviva*	Lithic soils
camas	*Camassia quamash*	Wet meadow
cattail/tule	*Typha* species/*Scirpus* spp.	Marsh wetlands
chokecherry	*Prunus* spp.	Riparian
cow parsnip	*Heracleum lanatum*	Moist meadows, woodland edges
currant/gooseberry	*Ribes* spp.	Riparian, meadow edges, talus
dogbane (Indian hemp)	*Apocynum cannabinum*	Wet hillsides, riparian
elderberry	*Sambucus* spp.	Riparian
huckleberry	*Vaccinium* spp.	Forested areas (pines/mixed conifers)
hyacinth	*Brodiaea hyacinthina (*syn. *Triteleia hyancinthina*)	Open grasslands to rocky open flats
juniper	*Juniperus occidentalis*	Hillsides, ridges, riparian
red-osier dogwood	*Cornus stolonifera*	Riparian
sedge	*Carex* spp.	Wet meadows, riparian
sego or mariposa lily	*Calochortus* spp.	Sagebrush community, dry, open slopes/flats
serviceberry	*Amelanchier alnifolia*	Riparian
tobacco root	*Valeriana edulis*	Wet meadows
wapato (arrowhead)	*Sagitarria* spp.	Ponds, lakeshore, wet marsh
western spring beauty	*Claytonia lanceolata*	Wet woodlands, meadows
wild onion	*Allium* spp.	Dry hillsides; plains
willow	*Salix* spp.	Riparian
wocas, water lily	*Nuphar polysepalum*	Lakes, wetlands
yampah, epos	*Perideridia* spp.	Lithic soils
yellowbell	*Fritilleria pudica*	Lithic soils

Source: Housley and Hanes (1998).

horse, camel, and a wide range of other vertebrate fauna. Since the geologic deposits which contain the fossils is relatively compact and hard, erosion bringing the fossils to the surface is slow. In addition, the deposits are exposed in vertical rather than horizontal faces, making the amount of material exposed at any particular time relatively small.

Management concerns for Rattlesnake Butte Formations are:

- This location or formation should be surveyed further to determine the full extent of the fossils within the area.
- Collections should be made of the exposed fossils and they should be properly curated for study and use by the public.

Historical Resources

Within the LRA, many locations contain remains from Lake County's history. On scattered locations, the remains of old line shacks that served as shelters for cattlemen and sheep herders can be found. These are usually one-room board and batten structures of simple construction. Most have fallen down and remain only as piles of weathered boards, nails, and broken glass. Within the Fort Rock/Christmas Valley area, nearly all of the old homesteads, towns, and businesses are gone. Other historic sites include the remains of historic roads and trails, Civilian Conservation Corps camps and project locations, abandoned mines and mine processing locations, ranch houses, corrals, cemeteries,

Table 2-37.—*Cultural plant ecological groupings (ethno-habitats)*

1) Lithic soils [1]	*Artemisia rigida, A. arbuscula*, geophytes (lomatium, bitterroot)
2) Wet meadows [1]	Camas, bistort, sedge, tobacco root
3) Riparian areas [1]	Willow, osier dogwood, currant, rose
4) Marsh/ponds [1]	Palustrine: sedges, rushes, tule, wapato; lacustrine: wocas
5) Sand dunes	Indian ricegrass, other grasses
6) Sagebrush	With bunchgrasses; with mountain mahogany
7) Woodlands	Juniper with bitterbrush, sagebrush, manzanita, quaking aspen, grasses, Ponderosa pine
8) Colluvium, alluvium, tallus slopes	*Ribes* spp., serviceberry
9) Desert saltbrush	*Atriplex* spp., *Sarcobatus vermiculatus*
10) Saltflats/playas	Waada, saltgrasses
11) Dry meadows	Grasses, surrounding shrubs
12) Vernal pools	Onions, camas
13) Disturbed areas (road sides, flooded areas, landslides)	Weedy species

[1] Plant communities "at risk" with decreases in area size.
Source: USDI-BLM (1995g)

and abandoned logging/sawmill locations.

Historical Resources in Need of Special Management

Shirk Ranch Property

The Shirk Ranch is located in the northwest portion of the Guano Valley. The complex consists of the main ranch house, a yard, a fence around the house, a well, well house, and water tower, two root cellars, an outhouse, two bunk houses, an old corral, an old barn location, an old house foundation, a burned building foundation and chimney, a blacksmith shop, a chicken coop, a cemetery, and other ranch features in the fields and ditches of the property.

The Shirk Ranch, which was built in the late 1800s, is important in regional history. It has been determined to be one of the finest extant examples of High Desert ranching in existence. It is a destination for many history buffs in the region. It is eligible for inclusion on the NRHP.

Management concerns about the Shirk Ranch Complex are:

- Because of neglect, the standing buildings and features of the Shirk Ranch are in need of immediate stabilization and repair. This is true of all of the buildings at the site.
- If a fire burns through the area, the buildings at the ranch are subject to destruction because of brush and grass surrounding them.
- Vandalism of the buildings is becoming a problem and artifacts from the property are being stolen at an increasing rate.
- Plans for the proper stabilization, use, and maintenance of the site are needed.

Oregon Central Military Road

The Oregon Central Military Road, which crosses much of the southern portion of the district, has several areas where features of the road exist in original condition. The road was built from Eugene, Oregon, to Fort Boise, Idaho, to move troops and supplies. Of the portions of the road which are in original condition (including ruts in rocks), the Stone Bridge in the Narrows between Crump and Hart Lakes and the unbladed portion are of national significance.

Management concerns about the Oregon Central Military Road are:

- Those portions of the road which are in original condition should be protected from vehicle traffic and artifact collection.

Human Uses and Values

Introduction

The LRA encompasses most of Lake County and a portion of Harney County. A small portion of Washoe County in Nevada is included in the area covered by the RMP. To effectively compile an economic profile of the planning area, Lake and Harney Counties were selected as the analysis unit.

The primary economic center of Lake County is the town of Lakeview. Lakeview is the county seat and the location of many Federal, State, and local government offices. Most basic goods and services are available in Lakeview. The area is also strongly tied to the city of Klamath Falls, located 95 miles west of Lakeview in Klamath County. A greater diversity of firms and most specialty services are available in Klamath Falls.

The major economic center of Harney County is the Burns/Hines area. These communities are located approximately 50 miles northeast of the planning area boundary. Other regional business centers include Medford and Ashland in Josephine County, Bend in Deschutes County, and Portland.

The nearest community with commercial air service is Klamath Falls. Lakeview is served by a rail spur line that links to Alturas, California. The nearest Amtrak service is in Klamath Falls. A commercial bus line operates between Lakeview and Klamath Falls.

Several smaller communities are located within the RMP area. Paisley is an incorporated community, while Adel, Christmas Valley, Summer Lake, Fort Rock, and Silver Lake are unincorporated communities in Lake County. These smaller communities generally have very limited services for residents and visitors: fuel, a campground, a motel or resort, a small store, a restaurant, and one or two churches.

Summary of ICBEMP Economic Findings

ICBEMP examined the Lake and Harney County areas generally and the communities of Lakeview, Paisley, Burns, and Hines specifically. The smaller, unincorporated communities of Adel, Christmas Valley, Summer Lake, Fort Rock, Silver Lake, and Blitzen were not examined. Lake County is located in the Bend/Redmond trade center. USFS lands are 19.3 percent of the land base and BLM, 48.7 percent. These public lands offer primarily roaded natural and primitive/semiprimitive recreational settings, but visitation is determined to be low (ICBEMP 1997). Harney County is located in the Boise trade center. USFS lands are 8 percent of the land base in Harney County, and BLM lands represent 62 percent of the land base. These public lands offer primarily roaded natural and primitive/semiprimitive recreational settings, but visitation is determined to be low (ICBEMP 1997).

The ICBEMP concluded that Lake County and Harney County are areas of low economic and social resiliency (USDA-FS and USDI-BLM 1996). This determination is based on their dependence on public land timber and forage and the fact that 20 percent of the Lake County budget and 21.3 percent of the Harney County budget are derived from Federal land payments.

Lakeview, Paisley, Burns, and Hines are analyzed in "Economic and Social Conditions of Communities: Economic and Social Characteristics of Interior Columbia Basin Communities and an Estimation of Effects on Communities from the Alternatives of the Eastside and Upper Columbia River Basin Draft Environmental Impact Statements" (Reyna 1998). This document identifies Lakeview as an isolated trade center with medium timber employment specialization and high government employment specialization. Paisley is determined to have very high agricultural employment specialization, low timber employment specialization, and low government employment specialization. Burns is determined to have high timber employment specialization and medium agricultural employment specialization. Hines is determined to have very high timber employment specialization and high agricultural employment specialization (Reyna 1998).

Population, Age Distribution, and Ethnicity

Lake and Harney Counties are among Oregon's least populated counties. Except for Lakeview and the Burns/Hines area, the two counties are primarily rural in character. Table 2-38 displays the census population in 1980, 1990, and 2000 for Lake County, Lakeview, and Paisley and for Harney County, Burns, and Hines.

Lake County has a relatively high percentage of population ages 65 or older. Estimates for 1997 were 1,211 or 16.4 percent of the population. There were an estimated 1,912 people in the under-18 age group (25.8 percent) and 4,277 in the 18–64 age group (57.8 percent). Harney County has a relatively high percentage of population ages 65 or older. Estimates for 1997 were 1,121 or 14.9 percent of the population. There were an estimated 1,881 in the under-18 age group (25.1 percent) and 4,498 in the 18–64 age group (60

percent). Age distribution for the State in 1997 was as follows: 0–17 is 25.6 percent of the population; 18–64, is 60.8 percent; and 65+ is 13.6 percent (Wineburg 1998). Information on age distribution and immigration suggests that Lake and Harney Counties are not attracting large numbers of retirees.

Lake and Harney Counties have limited ethnic diversity. Native Americans are represented at a rate greater than statewide in Lake County. They are also a measurable ethnic group in Harney County. Persons of Hispanic heritage (any race) are also well represented, but at rates less than statewide—in Lake and Harney Counties at 3.8 and 3.1 percent of the population, respectively (Frewing-Runyon 1999).

Native American residents may participate in unique cultural practices associated with reserved treaty rights. Activities may include fishing, hunting, and gathering plant materials for food or ceremonial purposes. No reservation lands are located in Lake County, but the Klamath Tribe has reserved rights in the area (Cannon 1999). The Burns-Paiute Tribe has a small reservation in Harney County, located near Burns. The Tribe was established by Executive order instead of by treaty and has no reserved treaty rights (Hanes 1999).

In some areas, Hispanic populations are strongly associated with labor-intensive agricultural practices and crops such as the production of fruits and vegetables for human consumption. This does not appear to be the case in Lake or Harney Counties. Agricultural activities in the two counties are not considered highly labor-intensive, and are limited primarily to production of hay, forage, and livestock.

In some areas, collection of special forest products is closely associated with Hispanic and/or Asian ethnic groups. This type of activity occurs on forested lands in Lake and Harney Counties (Cannon 1999). The majority of these lands are managed by the Fremont, Deschutes, Ochoco, and Malheur National Forests.

No other ethnic groups in Lake or Harney Counties are known to be associated with public land resources through unique cultural, historical, or employment practices. Table 2-40 displays ethnic distribution for the United States, Oregon, Lake and Harney Counties, and postal ZIP codes within Lake and Harney Counties.

Employment and Wages

Lake County

In 2000, an estimated 3,070 people were working in Lake County. This included almost 800 self-employed persons. Wage and salary workers were more common, totaling 2,290. The lumber and wood product industry was the dominant manufacturing employer, with all but 10 of the 310 manufacturing employees. Lumber and wood products employment peaked in 1994 at 600, then abruptly declined to 250 in 1998 before beginning the current upward trend.

In 2000, Federal, State, and local governments employed 930 people—the greatest number of people employed by any sector. However, since 1992, government employment has decreased by 11.4 percent (State of Oregon, Employment Department, Various Years). During the fiscal year1995, employment by Federal natural resource agencies in Lake County was as follows: BLM, 59; USFS, 165 (ICBEMP 1998).

The trade sector employed 570 people in 2000, an increase of 16.3 percent since 1990. The services sector employed 260 people in 2000, an increase of 30.0 percent since 1990. Growth in the trade and services sectors during this period has been very slow when compared to the statewide trend: trade is up 25.8 percent, and services are up 48.1 percent. Overall, Lake County has been experiencing shrinking employment. The civilian labor force has decreased 12.9 percent, and wage and salary employment is down 6.5 percent since 1990 (State of Oregon, Employment Department, Various Years). Unemployment has also been increasing since 1990.

Harney County

In 2000, an estimated 3,600 people were working in Harney County. This included 820 self-employed persons. Wage and salary workers were more common, totaling 2,780. Major manufacturing employers, SMC and Louisiana Pacific, are located in the Burns/Hines area, outside the planning area. Manufacturing employed 490 people in Harney County (State of Oregon, Employment Department, Various Years).

Federal, State, and local governments employed the greatest number of people at 1,090 (State of Oregon, Employment Department, Various Years). During the fiscal year1995, employment by Federal natural resource agencies in Harney County was as follows: BLM, 60; USFS, 74 (ICBEMP 1998).

The trade sector employed 570 people, up 16.3 percent from 1990 figures. The services sector employed 400 people in 2000, up 33.3 percent since 1990. However, growth in the trade and services sectors has been below

Table 2-38.—*Census population*

Locality	Census 1980	1990	2000
Oregon	2,633,156	2,842,321	3,421,399
Lake County	7,532	7,186	7,422
Lakeview	2,770	2,526	2,474
Paisley	343	350	247
Unincorporated	4,419	4,310	4,701
Harney County	8,314	7,060	7,609
Burns	3,579	2,913	3,064
Hines	1,632	1,452	1,623
Unincorporated	3,103	2,695	2,922

Source: Edmunston (1998), Edmunston (2001), and Wineburg (1998).

the statewide trends: trade is up 25.8 percent, and services are up 48.1 percent. Overall, Harney County has been experiencing growing employment. Unemployment has also been decreasing since 1996 (State of Oregon, Employment Department, Various Years).

Table 2-41 displays detailed employment information for Oregon and Lake and Harney Counties since 1970.

Per Capita Income and Poverty Rates

Lake County

Per capita personal income of $20,285 in 1999 was significantly below Oregon's statewide level of $26,958. Lake County also has a higher portion of income derived from transfer payments (22.5 percent) than the state as a whole (13.5 percent). Transfer payments include Social Security payments, Aid to Families with Dependent Children, unemployment compensation, disability payments, and other government payments. Typically, transfer payments are a major source of income for retirees and low-income people. The percent of income derived from dividends, interest, and rent in Lake County (25.5 percent) was similar to statewide figures (22.5 percent). This income represents returns on accumulated assets held by individuals and is often a large portion of income for the self-employed and retirees. Earned income, typically wages and salaries, was 52.0 percent of income in Lake County, significantly below the statewide 64.0 percent. Just as Federal, State, and local government is the dominant employer in Lake County, it is also the dominant provider of earned income at 45.3 percent (23.6 percent of all income). Statewide, Federal, State, and local government employment provides 17.6 percent of earned income, 11.2 percent of all income (U.S. Department of Commerce Bureau of Economic Analysis 2001).

Harney County

Per capita personal income of $21,173 was significantly below Oregon's statewide level of $26,958 in 2001. Harney County also has a higher portion of income derived from transfer payments (19.5 percent) than the state as a whole (13.5 percent). Total income derived from dividends, interest, and rent in Harney County (22.0 percent) was similar to the same kind of income statewide (22.5 percent). This income represents returns on accumulated assets held by individuals and is often a large portion of income for the self-employed and retirees. Earned income, typically wages and salaries, was 58.5 percent of income in Harney County, significantly below the statewide proportion of 64.0 percent (U.S. Department of Commerce Bureau of Economic Analysis 2001).

The poverty rate estimate for 1993 was 13.1 percent for Lake County. This compares to 13.2 percent for the State of Oregon. The poverty rate estimate for Harney County was 12.8 percent (Frewing-Runyon 1999). This statistic indicates that people whose incomes are very low live in Lake and Harney Counties, but that the proportion is not unusual for the Northwest region in general.

Table 2-39.—*Gross farm sales in thousands ($)*

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Oregon									
Grains	184,283	191,126	210,931	239,702	260,758	333,769	310,659	267,537	184,018
Hays and forage	97,983	92,156	85,833	110,251	115,493	128,372	148,737	189,826	150,972
Grass and legume seeds	216,162	210,874	191,122	201,315	222,483	239,808	316,973	343,191	342,763
Field crops	222,967	197,731	208,242	225,323	239,123	275,317	274,089	260,147	231,685
Tree fruits and nuts	140,312	157,121	175,322	141,806	146,116	167,501	164,291	235,243	193,324
Small fruits and berries	71,910	79,807	85,781	72,252	97,150	83,741	98,915	90,030	86,904
Vegetable crops	211,081	224,701	230,620	263,782	267,201	244,466	263,602	263,463	288,062
Specialty crops	604,362	607,303	765,883	90,938	892,237	940,294	869,656	939,673	930,258
Subtotal of all crops	1,749,060	1,760,819	1,953,734	2,165,369	2,240,561	2,413,268	2,446,922	2,589,110	2,407,986
Cattle and calves	415,652	413,583	400,938	410,602	376,683	340,293	252,141	342,835	389,160
Dairy products	214,422	205,196	226,898	214,577	218,897	216,589	237,009	218,073	245,454
Eggs and poultry	100,619	94,403	100,866	81,334	79,270	81,800	86,029	81,704	88,689
Miscellaneous animal products	87,394	85,443	75,678	83,923	82,428	89,119	75,218	75,284	74,937
Subtotal of all animal products	818,087	798,625	804,380	790,436	757,278	727,801	650,397	717,896	798,240
Total gross agriculture sales	2,567,147	2,559,444	2,758,114	2,955,805	2,997,839	3,141,069	3,097,319	3,307,006	3,206,226
Lake County	1990	1991	1992	1993	1994	1995	1996	1997	1998p
Grains	545	374	492	430	821	795	925	259	348
Hays and forage	11,740	10,001	9,253	15,491	17,720	16,494	19,532	29,530	16,968
Grass and legume seeds	0	0	0	0	0	0	0	0	0
Field crops	261	345	348	40	40	30	10	15	396
Tree fruits and nuts	0	0	0	0	0	0	0	0	0
Small fruits and berries	0	0	0	0	0	0	0	0	0
Vegetable crops	0	0	0	0	0	0	0	0	0
Specialty crops	539	523	3,777	4,935	2,329	2,200	2,729	2,732	2,625
Subtotal of all crops	13,085	11,243	13,870	20,896	20,910	19,519	23,196	32,536	20,337
Cattle and calves	28,732	23,860	18,274	19,560	18,361	15,879	14,688	21,265	20,881
Dairy products	0	0	0	0	0	0	0	0	0

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Eggs and poultry	0	0	0	0	0	0	0	0	0
Miscellaneous animal products	654	732	879	660	602	617	580	604	588
Subtotal of all animal products	29,386	24,592	19,153	20,220	18,963	16,496	15,268	21,869	21,469
Total gross agriculture sales	42,471	35,835	33,023	41,116	39,873	36,015	38,464	54,405	41,806
Harney County	1990	1991	1992	1993	1994	1995	1996	1997	1998p
Grains	147	217	399	307	451	560	670	216	217
Hays and forage	3,067	3,265	3,518	4,356	5,182	5,242	6,371	9,098	10,356
Grass and legume seeds	68	66	35	46	46	46	46	46	51
Field crops	0	0	0	0	0	0	0	0	0
Tree fruits and nuts	0	0	0	0	0	0	0	0	0
Small fruits and berries	0	0	0	0	0	0	0	0	0
Vegetable crops	0	0	0	0	0	0	0	0	0
Specialty crops	331	625	399	1,075	1,957	2,275	2,664	2,209	2,209
Subtotal of all crops	3,613	4,173	4,351	5,784	7,636	8,123	9,731	11,569	12,833
Cattle and calves	28,500	27,341	26,909	24,537	22,550	19,821	19,786	26,376	23,018
Dairy products	0	0	0	0	0	0	0	83	82
Eggs and poultry	0	0	0	0	0	0	0	0	0
Miscellaneous animal products	548	541	630	731	764	813	730	876	908
Subtotal of all animal products	29,048	27,882	27,539	25,250	23,314	20,634	20,516	27,335	24,008
Total gross agriculture sales	32,661	32,055	31,890	31,034	30,950	28,757	30,247	38,904	36,841

Source: Oregon State University Extension Service, various annual reports.

Table 2-40.—*Ethnic distribution, 1990 census*

	White	Black	Native American	Asian or Pacific Islander	Other	Hispanic (any race)
United States	80.3	12.1	0.8	2.9	3.9	9.0
Oregon	92.8	1.6	1.4	2.4	1.8	4.0
Lake County	95.0	0.1	2.8	0.6	1.6	3.8
Adel	91.1	0.0	0.0	0.0	8.9	12.0
Fort Rock	100.0	0.0	0.0	0.0	0.0	0.0
Lakeview	94.4	0.3	1.6	1.1	2.6	4.1
Paisley	97.3	0.0	2.4	0.0	0.3	1.6
Plush	100.0	0.0	0.0	0.0	0.0	0.0
Silver Lake	96.3	0.0	1.1	2.2	0.4	2.7
Harney County	94.8	0.0	3.7	0.6	0.9	3.1
Burns/Hines	93.7	0.1	4.0	0.8	1.4	3.4
Crane	100.0	0.0	0.0	0.0	0.0	0.0
Drewsey	100.0	0.0	0.0	0.0	0.0	0.0
Lawen	98.4	0.0	1.6	0.0	0.0	2.8
Riley	98.7	0.0	0.0	1.3	0.0	0.0

Source: U.S. Department of Commerce (1999), and Frewing-Runyon (1999).

Revenue Sharing

BLM and USFS lands represent 69 percent of the land base in Lake County (ICBEMP 1997). Federal lands are not subject to state or local property taxes. In recognition of the state and county services that are provided (roads, emergency services, and law enforcement), Congress passed legislation in 1976 to provide Payments-in-Lieu-of-Taxes to all states and counties where public lands are located. The BLM is currently charged with making these payments on behalf of itself and other Federal agencies. Revenue is distributed using a complex formula based on acres of Federal land, population, and the total of the previous years' revenue sharing from resource-use collections (timber, range, mining, and so forth). Previous years' payment are shown in Table 2-42.

Local Economic Activity Generated by Public Land Resources

Introduction

The BLM and other Federal land management agencies often make commodities available for use by the private sector. Both the BLM and USFS make rangelands available to private ranching concerns on a renewable permit basis. A fee is collected for each grazing head of livestock. Similarly, the BLM and USFS sell timber to private firms. In the planning area, however, the BLM manages no forested land for commercial harvest (see Table 2-43).

Agriculture and Livestock Grazing

Because of a cold, dry climate and short growing season (Sunset Publishing Corporation 1995), the agricultural industry centers on just a few products. The most common is the raising of cattle and calves for beef. In 1996, an estimated 86,690 head of cattle and calves were in Lake County, and an estimated 124,960 head of cattle and calves were in Harney County (Oregon State University 1997). Within the study area, cow-calf livestock operations, which sell calves as the primary product, are more common than cow-yearling operations, which sell yearlings as the primary product. In 1998, Lake County ranchers sold an estimated $20,881,000 worth of cattle and calves or related beef products. Sales in Harney County totaled $23,018,000 (Oregon State Extension Service 1999). No commer-

cial feedlots operate in Lake County or in Harney County (CenturyTel of Eastern Oregon, Incorporated 1998).

In conjunction with the livestock industry, growing hay and forage is the second leading product in both Lake and Harney Counties, with estimated sales of $16,968,000 and $10,356,000, respectively, in 1998 (Oregon State Extension Service 1999). The sales figure does not include hay and forage grown by ranching operations to feed their own livestock, thus the total value of hay and forage grown is much higher.

Gross farm sales in Lake County totaled $41,806,000 in 1998, about 1.3 percent of all agricultural sales in Oregon. Gross farm sales in Harney County totaled $36,841,000 in 1998, about 1.1 percent of all agricultural sales in Oregon (Oregon State Extension Service 1999). Table 2-39 displays detailed information on gross farm sales by commodity for the state of Oregon and for Lake and Harney Counties since 1990.

Recreation

Lake and Harney Counties have many beautiful locations for recreation opportunities. The tourism industry is small; however, for people seeking outdoor recreation and solitude, public lands in Lake and Harney Counties have a great deal to offer. A 1997 study prepared for the Oregon Tourism Commission estimated that travel-related spending in Lake County totaled $11,170,000 in 1997. Of this, an estimated $2,120,000 was associated with travelers staying in public campgrounds. In Harney County, travel-related spending totaled $22,230,000, with $8,970,000 attributed to travelers staying in public campgrounds. Lake County represents just 2 percent of the $5.05 billion of travel-related spending in the State of Oregon. Harney County represents 4 percent of total travel expenditures in Oregon (Oregon Tourism Commission 1998). Table 2-44 displays estimated travel expenditures by sector for the State of Oregon and Lake and Harney Counties.

Lake County: There are 40 public campgrounds in the county: 34 are operated by the USFS, 2 by the BLM, 1 by the USFWS at Hart Mountain Refuge, 2 by the State of Oregon, and none by Lake County (Trish Lindaman, personal communication). Seven private campgrounds and RV parks are listed in the yellow pages. Eleven motels and two bed and breakfasts are also listed (CenturyTel of Eastern Oregon, Incorporated 1998).

Harney County: There are eight public campgrounds in the county. None of those are located in the RMP area. Two private campgrounds and RV parks are listed in the yellow pages. Thirteen motels and three bed and breakfasts are also listed. None are located within the planning area (CenturyTel of Oregon, Incorporated 1999).

Air Resources

Introduction

Congress passed the "Clean Air Act" (CAA) in 1967 and amendments to the Act in 1972, 1977, and 1990. This Act gives the state the responsibility for the administration and enforcement of air quality and visibility standards. To meet these objectives, the State of Oregon has developed and administered the "State Implementation Plan." The "State Implementation Plan" specifies a 22 percent reduction in emission levels statewide from the baseline period of 1982–1984 by the end of year 2001, with a review in 1990 to determine whether "reasonable progress" has been made.

The "Oregon Smoke Management Plan," companion to the "State Implementation Plan," classifies certain areas as "designated areas" and "smoke sensitive areas." The "Oregon Smoke Management Plan" requires that prescribed burning, primarily slash burning, be done only when atmospheric conditions prevent smoke from deteriorating the air quality of these areas. However, the LRA is not included in the "Oregon Smoke Management Plan" but follows a local plan in conjunction with the other members of the South Central Oregon Fire Management Partnership (the partnership is a proactive voluntary effort to manage smoke emissions).

Existing Conditions

Lakeview and much of northern Nevada are a designated PM10 nonattainment areas due to high emissions from wood burning in the winter months. This means that within these areas the air has had concentrations of PM10 in excess of the "National Ambient Air Quality Standard" for PM10 (particles with a diameter of 10 microns or less). Although Lakeview has shown attainment for the past few years, it is still an area of concern and has not been formally redesignated as an attainment area. In 1995, the ODEQ submitted a PM10 control strategy to the Environmental Quality Commission for Lakeview that included revisions to the "Oregon Smoke Management Plan." The plan includes designating a 20-mile radius special protection zone

Table 2-41.—*Employment by sector: Statewide; Lake and Harney Counties; 1970–2000*

Sector	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Oregon													
Civilian labor force	864,500	1,295,000	1,491,000	1,508,000	154,200	1,596,000	1,640,000	1,652,700	1,719,700	1,727,600	1,763,700	1,761,100	1,802,900
Unemployment	61,700	107,000	82,000	90,000	116,000	116,000	89,000	80,100	101,600	100,700	98,600	100,400	87,500
Total wage and salary employment	709,200	1,044,600	1,251,900	1,250,800	1,274,200	1,308,400	1,362,900	1,418,400	1,474,600	1,526,400	1,551,800	1,575,100	1,603,300
Total manufacturing	172,300	215,100	220,300	211,700	209,000	211,700	221,300	229,300	235,800	243,600	246,100	242,200	243,000
Lumber, wood, and paper products	76,200	79,900	73,200	65,800	63,800	62,700	63,300	61,300	59,800	60,200	59,000	57,800	56,900
Other manufacturing	96,100	135,200	147,100	145,900	145,200	149,000	158,000	168,000	176,000	183,400	187,100	184,400	186,100
Total nonmanufacturing	536,900	829,500	1,031,600	1,039,000	1,065,200	1,096,700	1,141,600	1,189,100	1,238,900	1,282,800	1,305,700	1,332,800	1,360,300
Construction and mining	30,800	48,800	54,000	53,000	52,000	55,700	62,900	70,400	79,400	83,300	83,400	85,200	87,600
Transportation, communications, and utilities	48,700	60,500	64,500	65,200	65,700	66,800	68,900	71,300	73,500	74,900	76,200	77,800	79,900
Trade	162,000	255,600	313,100	314,300	318,700	328,900	344,100	357,000	365,900	377,500	383,400	388,000	394,000
Finance, insurance, and real estate	36,000	70,000	80,300	83,200	86,000	84,600	87,800	87,200	91,000	94,800	95,200	95,100	94,000
Services and miscellaneous	112,700	191,400	296,200	296,900	311,800	328,300	343,200	362,900	382,600	402,800	412,100	425,600	438,800
Government	146,700	203,200	223,500	226,400	231,000	232,600	234,700	240,200	246,600	249,500	255,300	261,300	266,000
Lake County													
Civilian labor force	2,790	3,600	3,890	3,840	3,750	3,850	3,940	3,710	3,890	3,760	3,460	3,350	3,390
Unemployment	260	390	370	310	330	370	330	320	460	440	410	340	320
Total wage and salary employment	1,840	2,430	2,310	2,340	2,410	2,460	2,520	2,470	2,440	2,330	2,160	2,170	2,290
Total manufacturing	410	450	410	410	470	550	610	510	440	390	280	300	310
Lumber and wood products	380	420	400	400	460	540	600	500	430	380	250	290	310
Other manufacturing	30	30	10	10	10	10	10	10	10	10	10	10	10
Total nonmanufacturing	1,430	1,980	1,900	1,930	1,940	1,910	1,900	1,960	2,000	1,950	1,900	1,870	1,980
Construction and mining	20	80	70	80	70	50	60	70	70	70	80	70	80
Transportation, communications, & utilities	120	70	70	70	60	60	50	50	50	50	50	50	60
Trade	330	470	490	500	500	490	550	550	550	540	520	510	570
Finance, insurance, and real estate	80	70	50	50	50	50	50	60	50	70	70	70	70
Services and miscellaneous	200	210	200	200	220	230	240	280	320	300	240	240	260
Government	680	1,080	1,010	1,030	1,050	1,030	950	960	980	920	930	930	930

Sector	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Harney County													
Civilian labor force	3,210	4,120	4,100	4,080	3,650	3,800	3,770	3,550	3,760	3,760	3,990	4,030	3,980
Unemployment	190	900	370	310	360	460	380	400	490	370	300	310	380
Total wage and salary employment	2,150	2,280	2,430	2,440	2,410	2,460	2,440	2,310	2,400	2,570	2,800	2,950	2,780
Total manufacturing	700	350	570	540	480	480	470	310	330	420	550	590	490
Lumber and wood products	700	340	540	520	460	460	450	290	240	210	240	260	210
Other manufacturing	0	10	30	20	20	20	20	20	90	210	310	330	280
Total nonmanufacturing	1,450	1,930	1,860	1,900	1,930	1,980	1,980	2,000	2,070	2,150	2,260	2,360	2,290
Construction and mining	50	160	80	60	50	70	70	80	90	110	120	120	80
Transportation, communications, and utilities	100	90	90	90	90	90	80	90	90	80	80	80	80
Trade	390	510	490	470	470	470	510	510	510	560	570	600	570
Finance, insurance, and real estate	60	70	70	60	50	50	50	60	60	70	60	70	60
Services and miscellaneous	230	250	300	320	330	350	330	340	350	380	410	430	400
Government	620	840	830	900	950	940	930	930	960	960	1,010	1,060	1,090

Source: Oregon Employment Department, various years.

Table 2-42.—*Payments-in-Lieu-of-Taxes ($)*

Year	Lake County	Harney County
1990	328,000	328,000
1991	308,000	308,000
1992	308,000	308,000
1993	308,000	308,000
1994	308,000	308,000
1995	295,177	295,177
1996	324,916	324,916
1997	300,180	300,180
1998	297,381	297,381
1999	307,820	307,820
2000	324,916	324,916

Source: "BLM Facts," various years.

around Lakeview to help mitigate potential smoke impacts from forest slash and prescribed burning. New air quality standards will regulate the concentrations of PM2.5 (particles with a diameter of 2.5 microns or less).

The South Central Oregon Fire Management Partnership has developed a smoke management plan to help limit smoke impacts into "designated areas" or "smoke sensitive areas." It was implemented and was effective during the 1999 spring burn season. An average of approximately 100 acres per year were burned from 1980 through 1983. Approximately 3,000 acres per year were burned from 1984 through 1998, and the LRA burned 17,500 acres in 1999. Smoke emissions from prescribed burning activities differ depending on the method used (broadcast burn or pile and burn); the grass, shrub, and tree species burned; the amount of fuel; the proportion of the fuel consumed by the fire; and weather conditions.

There is one air monitoring station, only operational during the winter, located in the town of Lakeview. There are no other monitoring stations within the resource area.

In addition to adhering to seasonal and other timing restrictions imposed by the "Oregon Smoke Management Plan," the BLM reduced emissions from burning through other means that include performing aggressive mop-up, increasing interagency coordination through the South Central Oregon Fire Management Partnership, cutting off or limiting new burning based on current or anticipated smoke accumulation and dispersion, using predicative forecasting to alert the partnership of stable air conditions, which in the past have led to dispersion and intrusion problems, and the monitoring by aircraft to track emissions from prescribed burning.

Fire Management

The LRA fire management program focuses on wildland fire and prescribed fire. The wildland fire season generally runs from mid-May through mid-September. Prescribed fires are usually planned for periods before and after the wildland fire season, depending on weather conditions. The LRA averages about 65 wildland fires per year, encompassing approximately 21,000 acres per year (Table 2-45 and Figure 2-1). About 90 percent of the fires that occur are caused by lightning; 10 percent of the fires are caused by humans.

The 1998 "Lakeview District Fire Management Plan" provides wildland fire management direction for specific geographic areas and outlines preferred suppression actions. The plan describes suppression action constraints (i.e., avoiding use of heavy equipment during initial attack) and defines the numbers of personnel and equipment required for efficient suppression actions (Map FM-1). The plan also recognizes the natural role of fire in the ecosystem and the risks involved with reintroducing wildland fire.

The 1996 "Fort Rock Area Fire Management Plan" provides direction for suppressing naturally-occurring fires only within the Fort Rock area. These naturally-occurring fires are monitored on a daily basis, and a suppression matrix is followed that is based on a least cost plus loss formula. These fires often extinguish naturally. The typical fire size that occurs in the Fort

Table 2-43.—*Timber harvest by ownership*

Year	Forest industry	Other private	Tribal lands	State	BLM	USFS	Other public	Totals
Lake County								
1984	14,292	273	0	0	0	108,131	0	122,696
1985	52,997	0	0	0	0	138,539	0	191,536
1986	25,562	71	0	0	0	190,092	0	215,725
1987	26,281	994	0	0	0	145,906	0	173,181
1988	13,790	2,029	0	0	0	103,673	0	119,492
1989	55,195	1,806	0	0	0	127,943	2,381	187,325
1990	33,634	2,522	0	6	0	72,600	0	108,762
1991	63,723	2,263	0	0	0	82,273	332	148,591
1992	67,562	14,868	0	0	0	62,983	0	145,413
1993	31,229	14,252	0	0	0	71,185	0	116,666
1994	26,506	5,748	0	0	0	41,789	0	74,043
1995	32,191	9,389	0	0	0	46,780	0	88,360
1996	31,816	3,982	0	0	0	16,890	0	52,688
1997	27,202	4,458	0	0	0	44,078	0	75,738
1998	25,280	1,732	0	0	0	22,930	0	49,942
Harney County								
1984	337	0	0	0	794	68,234	0	69,365
1985	1,807	980	0	0	0	88,495	0	91,282
1986	497	17,345	0	0	0	85,557	0	103,399
1987	410	18,412	0	0	0	91,072	0	109,894
1988	0	100	0	40	0	74,525	0	74,665
1989	14,983	539	0	0	0	62,215	0	77,737
1990	2,253	1,699	0	0	2,413	86,531	0	92,896
1991	1,165	2,474	0	0	1,834	131,995	0	137,468
1992	515	4,041	0	0	0	59,280	0	63,836
1993	0	3,677	0	0	0	42,073	0	45,750
1994	182	4,830	0	0	0	16,785	0	21,797
1995	41	5,335	0	0	300	20,141	0	25,820
1996	840	10,259	0	0	298	11,170	0	22,567
1997	701	1,691	0	0	0	11,116	0	13,508
1998	0	1,130	0	0	78	8,938	0	10,146

Source: State of Oregon, Department of Forestry, various annual reports.

Rock Fire Management Area is less than one acre. The plan covers 343,000 acres or 10 percent of the total LRA in the northern portion of the LRA. Approximately 30 to 45 lightning ignitions are detected in this area each year. Table 2-46 shows the number of fires by size class for the past 20 years in this area.

The LRA's prescribed fire program, started in 1981, aims to reduce fuel loadings and restore the natural landscape. From 1981 to 1983, about 100 acres were burned each year. Since 1984, prescribed burns have averaged about 3,000 acres per year, depending on favorable burning conditions. In fall 1999, one exceptionally large prescribed burn covered more than

Table 2-44.—*Travel spending in thousands ($) and employment generated, 1997*

	Oregon		Harney County		Lake County	
Category	Spending	Jobs generated	Spending	Jobs generated	Spending	Jobs generated
Accommodation	842,000	15,290	2,900	69	1,720	41
Eating, drinking	1,091,000	29,682	4,230	414	2,260	75
Food stores	399,000	2,576	3,370	24	1,510	11
Recreation	567,000	8,879	2,110	47	1,000	22
Retail sales	835,000	5,898	4,330	36	2,060	17
Ground transportation	814,000	4,190	5,290	18	2,630	20
Air transportation	506,000	3,446	0	0	0	0
Travel arrangement		6,058		0		0
Totals	5,054,000	73,009	22,230	335	11,170	186

15,000 acres. Burns are conducted in sagebrush to reduce hazardous fuel loading, restore typical vegetation conditions to the landscape, and achieve desired vegetation characteristics.

Values at Risk

There are numerous risks involved with fire management activities; these risks are associated with wildland fire exclusion (no fires), with using prescribed fire, and with wildland fire suppression. Rangeland health, wildlife habitat, and air quality are the primary values at risk; grazing is the main commodity at risk.

Light surface fires, whether prescribed or naturally-ignited, often benefit rangeland health and wildlife habitat. By contrast, high intensity fires may have negative short- and long-term impacts to rangelands and wildlife habitat.

Fire Exclusion

In the "Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin," it is noted that the subbasins of southcentral Oregon, including Guano, Warner Lakes, Abert, and Summer Lake, have been significantly altered by grazing and fire exclusion. The risks of fire exclusion (no fires), although not immediately visible, become evident as time passes. Risks include species conversions from grasslands or shrub steppe to woodlands, and, over time, increased fuel loading. Changes in species and fuel loading alter the historical fire regime. For example, fire exclusion might allow juniper encroachment into sagebrush-steppe ecosystems, whereas periodic fires in sagebrush-steppe ecosystems would kill small juniper trees and allow regeneration of native grasses and forbs. These grasses and forbs would carry subsequent low-intensity fires.

Periodic natural fires have been absent for over a century. This has allowed juniper to spread from less fire-prone sites to sagebrush and riparian communities. The majority of today's juniper stands within the planning area are composed of such "invasive" trees.

Prescribed Fire

BLM prescribed fire operations are carefully planned. LRA specialists give considerable thought to all possible effects of the fire. However, regardless of the precautions taken, there are risks associated with prescribed fire. These risks include the fire escaping predetermined boundaries, fires burning more intensely than planned, or fires having unanticipated negative effects. For example, fires that exceed the holding capabilities of the operators can escape and burn private property or damage range improvements, such as fences. Prescribed fires may allow noxious weeds to invade a burned site. There are also air quality risks; however, these risks may be mitigated by prescribed burning during weather conditions that allow for good smoke dispersal. In spite of the risks, prescribed burning offsets risks associated with future wildland fires. Recent prescribed fire history is displayed on Map FM-2.

Wildfires

Risks of wildland fire depend on the intensity and size of the wildland fire. Suppressing fires in the LRA altogether allows sagebrush and juniper to dominate, which limits grass production. Low-intensity wildland fires may actually improve rangeland health and

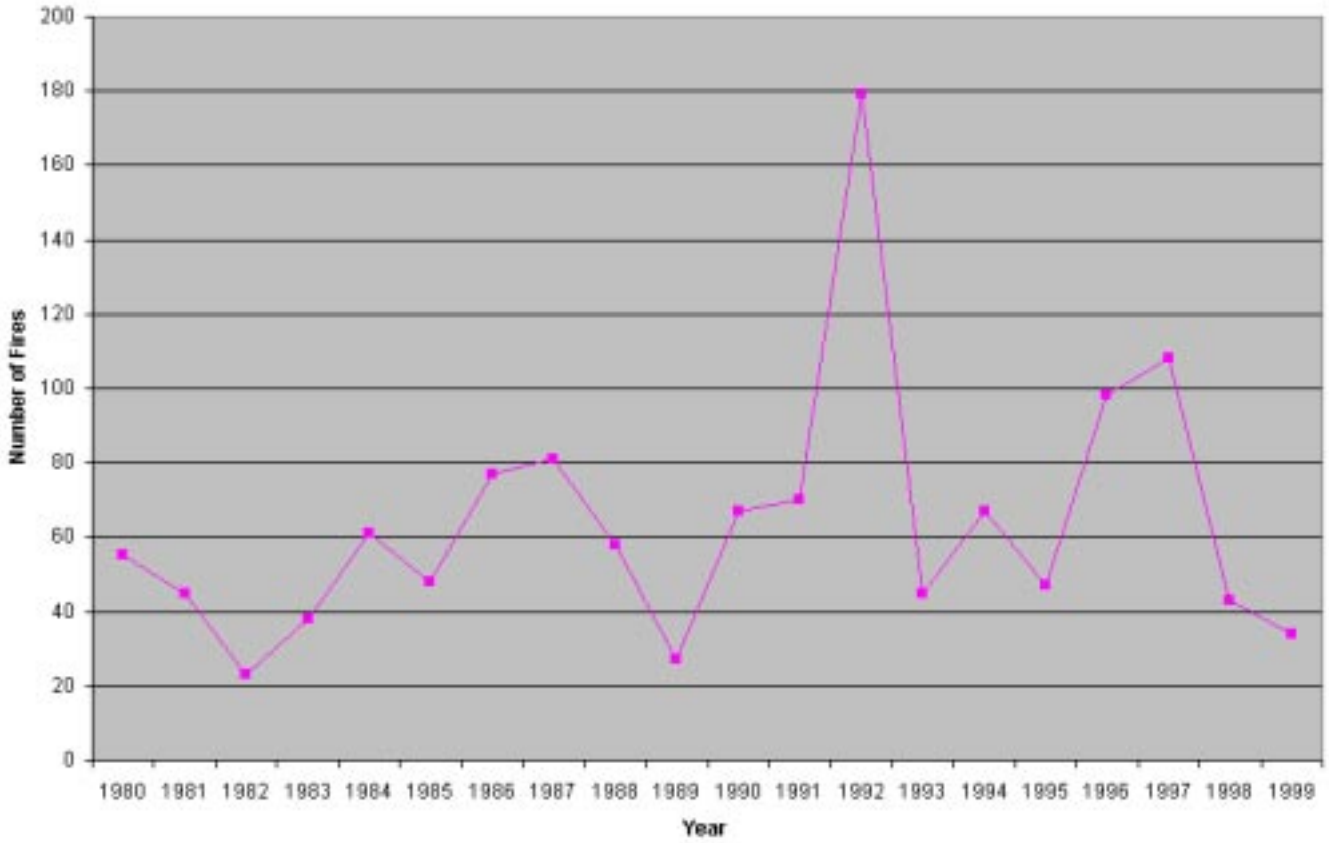

Figure 2-1.—*Total number of fires for the Lakeview Resource Area, 1980–1999*

wildlife habitat. High-intensity wildland fires quickly alter rangelands and wildlife habitat and can produce large amounts of smoke. Domestic livestock may be displaced for several years and sensitive wildlife species, such as greater sage-grouse, may decline following large wildland fires. While species that favor early successional stages may benefit in the short-term from wildland fires, species that rely on older vegetation will suffer when that vegetation is burned. Severely burned landscapes are more susceptible to noxious weed invasions, urthering declines in rangeland health and wildlife forage. In addition, smoke emissions cause air quality degradation.

Fire also has an effect on recreational and visual resources. Locations where prescribed fires or wildland fires have occurred may become temporarily less desirable for hikers, campers, or hunters. Impacts on visual resources may vary considerably depending on the location of the fire. Land-disturbing activities employed in fire suppression may negatively impact the landscape. However, the impact of the fire lessens over time as the landscape becomes revegetated, at which time the area may become more desirable to recreationists. Recent wildland fire history is displayed on Map FM-2.

Appropriate Management Response

Appropriate management response is a set of specific actions taken in response to a wildland fire to implement protection and wildland fire use objectives. These responses can range from full initial attack suppression to monitoring. The appropriate management response for a site-specific area will be documented in the fire management plan. Included in this plan will be a matrix which considers, along with other factors, fire danger, wildland fire use areas, and resource availability. A wildland fire situation analysis will be done on all fires that exceed initial attack capabilities.

Wildland Fire Use

Wildland fire use is the management of naturally ignited wildland fires to accomplish prestated resource management objectives in predefined geographic areas outlined in the fire management plan. A matrix will be outlined in the fire management plan to determine

Table 2-45.—*Number of fires by size class on the Lakeview Resource Area (in acres)*

Year	0–0.24	0.25–9.9	10–99.9	100–299.9	300–999.9	1000–4999.9	5000 +
1980	48	3	4	0	0	0	0
1981	34	4	2	1	2	1	1
1982	15	7	0	1	0	0	0
1983	18	9	3	2	0	3	3
1984	35	3	10	1	0	6	6
1985	29	9	3	1	3	2	1
1986	54	5	8	5	1	1	3
1987	67	2	7	1	3	1	0
1988	50	3	4	0	0	1	0
1989	18	6	2	0	1	0	0
1990	45	19	1	2	0	0	0
1991	66	4	0	0	0	0	0
1992	159	12	4	1	2	1	0
1993	38	7	0	0	0	0	0
1994	57	7	2	0	0	1	0
1995	37	6	1	2	1	0	0
1996	67	22	4	2	3	0	0
1997	100	7	1	0	0	0	0
1998	30	5	7	0	1	0	0
1999	17	12	2	1	0	2	0
2000	9	4	1	1	0	1	2
Average	47	7	3	1	0.8	1	0.8

Table 2-46.—*Total number of fires by size class occurring in the Fort Rock Fire Management Area, 1980–2000*

	0–0.24	0.25–9.9	10–99.9	100–299.9	300–999.9	1000–4999.9	5000 +
Number of fires	310	26	8	2	3	3	1

when wildland fire use is meeting resource management objectives or when it becomes wildland fire suppression. If wildland fires have no recognized resource benefits, there is no wildland fire use, only wildland fire suppression using least cost plus loss concepts.

Impacts of Past Management Activities on Fire Hazards

Past management actions have both increased and decreased fire hazards in the LRA. Increased fire hazard is associated with fire exclusion, and decreased fire hazard is associated with prescribed fire practices and allowing the restoration of a more historical vegetative condition. Management practices, such as grazing and reseeding, also affect fire hazard by altering vegetation to make it either more or less flammable.

While implementing prescribed burns and monitoring fires in the Fort Rock area, the LRA has also been suppressing wildland fires. Without having a detailed and carefully analyzed fire management plan in place for a specific area, current policy requires that all wildland fires be suppressed. Only 10 percent of lands in the LRA are included in a plan that would allow natural fires to burn under certain conditions. These naturally-occurring fires are monitored on a daily basis and a suppression matrix is followed that is based on a least cost plus loss formula. BLM actively suppresses wildland fires as quickly and safely as possible on the

other 90 percent of the acres in the LRA.

Fire exclusion and suppression alter vegetation composition and fire regimes. Suppressing fires has allowed sagebrush and juniper to dominate and has resulted in reduced grass and forb production. As juniper invade a site, they eliminate understory vegetation, thus making invaded sites highly resistant to low-intensity fire. Fires occurring in juniper-invaded shrublands may only carry during strong wind conditions resulting in high-intensity wildland fire. Grazing practices may also reduce grasses and forbs to such an extent that low-intensity fire cannot be sustained. In such degraded rangelands, the lack of fire may further contribute to unwanted shifts in vegetation composition. Prescribed fires are used to reduce the risk of wildland fire. Prescribed burns are planned to reduce fuel loading and enhance native vegetation composition. In some cases, natural vegetative conditions are restored by using prescribed fire.

Cheatgrass is an especially noxious, invasive annual grass that creates a fire hazard in limited parts of the resource area. Cheatgrass thrives in disturbed environments; overgrazing or wildland fires often provide an opportunity for cheatgrass establishment. It competes with native grasses, forbs, and shrubs, and may be successful at overcoming and outcompeting the native vegetation, leaving large expanses of cheatgrass. An area that is overcome by cheatgrass has the tendency to burn more frequently than the native shrublands and grasslands. Repeated burning encourages future cheatgrass production at the expense of native grasses, forbs, and shrubs.

Crested wheatgrass is an introduced perennial grass that is sometimes planted by the BLM to revegetate disturbed sites (for example, after a wildland fire). If crested wheatgrass is planted in areas formerly dominated by shrubs, the fire regime may be altered. Although crested wheatgrass plantings may eventually allow some native plants to recover over time, large expanses of crested wheatgrass have the potential to burn more frequently than native plant communities.

In order to help reduce the risks of wildland fires, BLM regulates the activities of both industrial and nonindustrial use of the public land under its administrative umbrella. One way this is done is through the Industrial Fire Precautions Level System, which regulates permitted industrial operations on the LRA. This system dictates the types of activities (such as chain saw use) that are acceptable at given fire danger levels. Nonindustrial uses may be managed through regulated closures and management directives for such activities as campfires and vehicles driving on public land. The directives are specific in terms of locations involved and actions prohibited. Such closures and directives are normally issued during periods of unusually high fire danger.

Impacts of Suppression Activities on Resources

Building firelines during suppression operations, especially dozer lines, may increase soil erosion and compact the soil. So that the impacts on resources can be mitigated during initial attack activities, the fire management plan limits the use of heavy equipment on the resource area. However, the noticeable changes to the landscape that result when there are no fires at all may, in fact, indicate an impact to the resources that is more negative than suppression activities. Changes in vegetation, changes in fire regimes, and changes in some wildlife populations are direct and indirect results of fire exclusion.

Fire Ecology of the Major Vegetation Types

Ponderosa pine forests are found in scattered patches throughout the LRA. Most are adjacent to the Fremont National Forest on the western edge of the resource area. The Lost Forest in the northeast section of the resource area is an area of isolated ponderosa pine forest. Studies in southeastern Oregon have shown that prior to 1900, most ponderosa stands experienced low-severity surface fires at intervals ranging from 1 to 30 years (Agee 1993). Because of its thick bark and self-pruning branches, ponderosa pine is fairly resistant to mortality from fire. Today's fire suppression techniques are very successful at quickly controlling ponderosa pine fires while they are still small. However, this suppression in ponderosa pine forests has allowed juniper encroachment and increased surface fuel loadings, which increases the potential for more intense wildland fire behavior.

Juniper woodlands are the most widely distributed forest type in the LRA. Juniper continue to expand their range by encroaching into ponderosa pine forests and shrublands. It is difficult to determine fire histories in juniper. Old growth juniper isolated from other vegetation may not burn for over 300 years. The mountain big sagebrush fire regime where much juniper has encroached today, typically burned every 15 to 25 years (Miller and Rose 1999). Young western junipers have thin bark and are readily killed by surface fires. Juniper stands with grass and shrub understory will allow fires to carry through the juniper. As trees mature, they choke out shrub and grass vegetation,

leaving little surface vegetation and the stand more susceptible to erosion. Older stands become resistant to fire because low productivity limits fuel availability. Western juniper does not sprout after fire; reestablishment is through seed, which is dispersed fairly slowly by water and animals.

Sagebrush is the most common vegetation type found throughout the LRA. The main sagebrush vegetation types are: big sagebrush (Wyoming and basin) shrub/grassland, low sagebrush shrub/grassland, silver sagebrush shrub/grassland; and mountain big sagebrush shrub/grassland. Wyoming big, basin big, low, and mountain big sagebrush are easily killed by fire and recolonize a site by seeds stored in the soil or by wind dispersal of off-site seeds. Silver sagebrush may regenerate after fire by root sprouting or by off-site seeds. Recovery times of all the sagebrush species greatly depend on the seed availability and moisture following disturbance. Sagebrush fire return intervals are difficult to determine since fire histories cannot be accurately studied. Sagebrush are typically entirely consumed by fire and do not leave fire scars as evidence that can be used to determine historical fire regimes. However, site productivity affects the fire behavior and frequency in these sagebrush stands. Sites with higher productivity (more grass and forb understory) will carry fire easier and more frequently than sites with low productivity. Generally, silver and low sagebrush are found on less productive sites compared to mountain, basin, or Wyoming big sagebrush.

Emergency Fire Rehabilitation

Emergency fire rehabilitation refers to activities that may be completed following wildland fire. Common activities may include seeding with native or nonnative plants, noxious weed control, erosion control, and repairing or building temporary fencing burned in fire. Following a wildland fire, specialists decide whether emergency fire rehabilitation activities are warranted, based on vegetation condition, soils, fire size and intensity, stream condition, slope, improvements burned by wildland fire, etc. Currently, emergency fire rehabilitation activities are completed after a written and approved emergency fire rehabilitation plan.

Recreation Resources

Introduction

Three major highways and numerous county roads traverse the LRA. This transportation system provides access to a number of roads (both primitive and maintained) on BLM-administered lands. Significant routes within this transportation network include two designated national back country byways and one designated national scenic byway (Map R-1). Given the considerable means of access, dispersed recreation opportunities exist throughout the entire planning area. Although limited in number, there are opportunities for developed recreation at several sites within the planning area. Adjacent areas of interest managed by other agencies include the Hart Mountain and Sheldon National Antelope Refuges, Steens Mountain, and the Deschutes and Fremont National Forests.

Although the majority of visitors to the LRA are from Oregon, an increasing number are from out of state and abroad. BLM attractions featured on recent editions of Oregon Public Broadcasting's "Oregon Field Guide" have further piqued the interest of high-desert enthusiasts. As visitors have experienced for themselves, there are many and varied opportunities for self-reliant recreational pursuits in the "Oregon Outback."

Current Uses and Facilities

The major recreation activities in the planning area include general sightseeing, driving for pleasure, scenery and wildlife viewing, hiking and backpacking, photography, hunting and fishing, camping, picnicking, hang gliding, rockhounding, caving, and driving OHV's. The heaviest recreation use occurs over Memorial Day and Fourth of July holiday weekends and during fall hunting seasons. There are no fee use areas in the LRA. Commercial recreational use varies year-to-year, but generally three special recreation permits are issued each year for hunting/guiding activities, one or two are issued for natural history tours, and four are issued for adolescent wilderness therapy schools. Administration responsibilities for several of these special recreation permits are shared with adjacent BLM districts or the Fremont National Forest.

Most recreational use within the LRA is concentrated in two areas—northern Lake County and the Warner Wetlands ACEC/special recreation management areas. The northern Lake County area can generally be described as the portion of the LRA north of Summer Lake and west of Highway 395. Recreation sites and facilities in this area that are regularly patrolled by BLM personnel include the Black Hills, Duncan Reservoir Campground, Buck Creek Watchable Wildlife Site, West Fork Silver Creek, Green Mountain

Camp, Crack-in-the-Ground, Derrick Cave, Fossil Lake, Christmas Valley Sand Dunes, and the Lost Forest (Map R-1). All of these sites are located on or near the Christmas Valley National Back Country Byway and are within or adjacent to four WSA's and a RNA. The heaviest recreational use occurs during the summer months, but the area is heavily hunted in the fall and early winter months as well.

One high-use area is the Sand Dunes, an area open to OHV and all-terrain vehicle use. During Memorial Day weekend, up to 1,000 OHV enthusiasts crowd into the area. Visitor use in northern Lake County has increased in recent years. This increase in use has paralleled the increase in population which has been occurring in Bend, Oregon, approximately 80 miles away.

Since its establishment as an ACEC in 1989, recreational use and interest in the Warner Wetlands have also been on the rise. Located along the Lakeview to Steens National Back Country Byway and adjacent to the Hart Mountain National Antelope Refuge, interpretive facilities at Hart Bar and the Warner Valley Overlook orient and educate visitors to the area. Until recently, use of these sites has been a by-product of recreational visits to Hart Mountain Refuge (estimated at 20,000). As water levels have increased at the Warner Wetlands (1999 was historically high), visitor numbers to the wetlands as a destination point have risen steadily. During these high water years, fishing, waterfowl hunting, canoeing, sea kayaking, and bird watching are popular recreation activities in the Warner Wetlands ACEC.

Other attractions and facilities in the resource area include the following:

- The Sunstone Collection Area is a 4 square mile area open to the public for the collection of sunstones for personal use.

- Highway Well Rest Area, located 55 miles north of Lakeview on U.S. Highway 395, is cooperatively managed by the State of Oregon and BLM. Recently reconstructed, it provides travelers with vault toilets, drinking water, picnic tables under a shade structure, and several interpretive signs.

- Abert Lake Watchable Wildlife Site is a small interpretive site located along Abert Lake on U.S. Highway 395 about 25 miles north of Lakeview.

- A short stretch of the Chewaucan River above the town of Paisley flows through intermingled public lands (BLM and USFS). This area is monitored by the Paisley District of the Fremont National Forest through an informal agreement.

- The Doherty Slide Hang Gliding Launch Site, located 60 miles east of Lakeview, adds to Lakeview's title of "Hang Gliding Capital of the West."

Fishing opportunities are available throughout the planning area in numerous lakes, reservoirs, and streams. The ODFW stocks rainbow trout in the following waters: Mud Lake, Spaulding, Lucky, Sunstone, West Sunstone, Duncan, Sherlock, Sid Luce, Big Rock, and MC Reservoirs. In the Warner Wetlands, crappie, largemouth bass, and bullhead catfish are available for catching during high water years.

Hunting for big game (pronghorn, bighorn sheep, deer, and elk), as well as for waterfowl and upland game birds, occurs throughout the planning area, mainly during the fall and early winter months.

BLM has developed brochures for several of the more visited or sensitive areas, and these have been made available at numerous businesses and agency offices. Brochures are available for the Lakeview to Steens and Christmas Valley National Back Country Byways, the Sunstone Collection Area, the Lost Forest RNA, and the Christmas Valley Sand Dunes. Handouts for the Warner Wetlands have been developed showing the road system and a marked canoe trail. Two recreation maps showing major roads and recreational opportunities cover the entire LRA and are available for sale.

Locations of these sites are shown in Map R-1, and estimated use figures derived from traffic counter data and field observations are shown in Table 2-47.

Recreational Fee Demonstration Program

BLM currently has authority to charge and collect fees through two separate programs related to the "Land and Water Conservation Fund Act" and other laws.

The "Omnibus Budget Reconciliation Act" of 1993 (Public Law 103-66) amended the "Land and Water Conservation Fund Act" and further expanded the BLM's authority to collect recreation use fees and deposit these fees into special accounts. Up to 15 percent of the fees collected are available for immediate use at the sites where the fees were collected and the remainder of the fees collected may be appropriated

to the area where they were collected in the following fiscal year.

The 1996 appropriations process (Public Law 104-134) again amended the "Land and Water Conservation Fund Act" by establishing criteria for the Pilot Fee Demonstration Program (Fee Demo) for four agencies including the BLM, National Park Service (NPS), USFS and USFWS. This program is to test the collection, retention, and reinvestment of new admission and user fees. The program broadened collection authority for the agencies to collect fees and make these receipts immediately available for use at up to 100 designated sites throughout the BLM. The authority has been extended through year 2002 and is proposed to be extended even further. The funds may be spent for backlog repair and maintenance projects, interpretation, signs, habitat and facility enhancement, resource preservation, annual operation, maintenance, and law enforcement relating to public use.

Currently the BLM has decided to allow 100 percent of the funds collected at each designated project to be deposited into the Fee Demo account to be used at the sites where the fees were collected. This includes the Golden Eagle Passport sales.

Congressional legislation to change or extend the Fee Demo program or make it permanent is pending.

Currently, the LRA does not have any fee demonstration sites. The only existing site that lends itself to fee collection would be Duncan Reservoir Campground. However, since this campground offers limited amenities (no drinking water or trash collection), and the cost of collecting fees would exceed receipts, fee collection would be neither cost effective nor desirable for the public.

If BLM were allowed more fee demonstration sites above the current 100 projects, fee demonstration could be considered for commercial and permitted uses throughout the LRA, or for commercial and permitted uses within special recreation management areas. Fees collected would be used to improve recreation facilities, and to monitor activities permitted under special recreation permits.

Special Recreation Management Areas

All BLM-administered land falls into two recreation management classes, special recreation management areas or extensive recreation management areas. A relatively small portion of the public lands are managed as special recreation management areas. Major investments in recreation facilities and visitor assistance are appropriate in special recreation management areas when required to meet management objectives. Primary management objectives within special recreation management areas are providing recreation opportunities that would not otherwise be available to the public, reducing conflict among users, minimizing damage to resources, and reducing visitor health and safety problems. These areas are described in the following sections and are shown on Map R-1.

Existing Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: The Warner Wetlands Special Recreation Management Area has the same size, configuration, and boundaries as the Warner Wetlands ACEC. Located approximately 50 miles northeast of Lakeview, the current recreation management of the 53,000-acre wetlands is to provide for activities and facilities which compliment, or are consistent with, the wildlife, vegetation, and cultural resource management objectives of the ACEC. Facilities in the special recreation management area consist of Hart Bar Interpretive Site, Warner Valley Overlook, and a 10-mile canoe trail marked in the channels between Campbell, Turpin, and Stone Corral Lakes. The 1990 "Recreation Area Management Plan" discussed constructing additional facilities (trails, campgrounds, and overlooks), but these have not been constructed because of potential impacts to cultural resources and wildlife habitat. Since USFWS recently acquired lands within the ACEC, there are tentative plans for a joint BLM/USFWS campground to be constructed on that property. The LRA has an informal agreement with USFWS, where USFWS is responsible for the maintenance of the Warner Valley Overlook site. The Lakeview to Steens National Back Country Byway takes the visitor past Hart Bar and Warner Valley Overlook and onto the pronghorn refuge to connect with the Steens Mountain National Back Country Byway.

The type and amount of recreational use in the Warner Wetlands away from the back country byway fluctuates with the water levels. During high-water years when the lakes and channels fill, activities such as boating, fishing (crappie, largemouth bass, and bullhead catfish), waterfowl hunting, canoeing, and sea kayaking are possible. Currently, there are no restrictions on motorboat use. During dry years, these water-based opportunities are not available and use is more vehicle oriented. During these dry years, illegal artifact

Table 2-47.—*Visitation*

Name	Annual visits	Amenities and other data
Abert Lake Watchable Wildlife Site	16,000	Graveled pulloff on Highway 395 and 3 interpretive signs; located within Lake Abert ACEC.
Doherty Slide Hang Gliding Launch	400	Access road, graveled launch pad, register box; located on Highway 140.
Highway Well Rest Area	70,000	Two vault toilets, drinking water, trash cans, picnic shelter, interpretive signs; located on Highway 395.
Sunstone Collection Area	4,000	Vault toilet, an interpretive sign.
Buck Creek Watchable Wildlife Site	600	Access road, parking area, picnic table, interpretive signs.
Crack-in-the-Ground	7,500	Vault toilet, fenced parking area, foot trail, register box; located within the Four Craters WSA and along a national back country byway.
Derrick Cave	2,800	Register box; located on "way" within the Devils Garden WSA.
Green Mountain Camp	800	Three picnic tables on graveled sites; located along a national back country byway.
Duncan Reservoir Campground	5,000	Vault toilet, four picnic tables on graveled sites, one group site, boat launch, and register box; stocked annually by ODFW; the only developed campground in the LRA.
Lost Forest/Sand Dunes/Fossil Lake ACEC	11,000	Bulletin board, interpretive signs, register box, wood barrier fences; includes the Sand Dunes WSA, Lost Forest RNA, and Fossil Lake Vehicle Closure; located along a national back country byway.
Warner Wetlands	14,500	
Hart Bar		Two vault toilets, parking area, four interpretive signs, two viewing blinds on 1-mile mowed dike; located in the Warner Wetlands ACEC and along a national back country byway.
Warner Valley Overlook		Graveled parking area, 0.25-mile trail, four interpretive signs; located along a national back country byway, and adjacent to Hart Mountain National Antelope Refuge.
Remainder of resource area	123,318	Two back country byways and a national scenic byway; numerous hunting and dispersed recreation opportunities.

collecting becomes a major problem, as does cross-country vehicle travel. The OHV designation for the special recreation management area is limited to designated roads and trails, but the recreation area management plan does not specifically designate any roads or trails open or closed. However, an informal inventory of the road system has since been conducted, and most of the roads and trails have been designated as open. During high-water years, portions of almost all of these roads are under water and impassable, sometimes for several years. Use of the special recreation management area is estimated at 8,000 visitors a year, mostly associated with Hart Bar.

Potential Special Recreation Management Areas

Northern Lake County: This area consists of the more highly visited areas along the Christmas Valley Back Country Byway, including four WSA's (Devils Garden, Squaw Ridge, Four Craters, and Sand Dunes),

the Lost Forest/Sand Dunes/Fossil Lake ACEC, and the associated geologic features in the area (Black Hills, Crack-in-the-Ground, Derrick Cave, Sand Dunes, Lost Forest, and Fossil Lake). All the LRA's seven caves are also within this area. Depending on future management direction, the area could be expanded to include Duncan Reservoir Campground, West Fork Silver Creek, and Buck Creek.

Recreational use in northern Lake County has steadily increased over the past 10 years. Since 1994, the LRA has hired a seasonal employee to patrol north Lake County from April through November. This position is primarily funded through an Oregon State Parks and Recreation OHV grant. Currently, there are limited facilities at the various sites, and OHV designations range from open to limited to closed. Although the Sand Dunes are within a WSA, they have remained open to crosscountry vehicle use since this use was occurring prior to the area's being designated a WSA. Many OHV enthusiasts come from throughout central Oregon to recreate in these dunes because the dunes along the Oregon coast have become crowded and restrictive. OHV use violations occur regularly at the Sand Dunes because the surrounding area is either limited to designated roads and trails for vehicle use or closed completely.

Over the last few years, recreational use during the winter season in northern Lake County has steadily increased. The winter rains and snow and the increased visitation during the winter season have resulted in increased damage to roads. Management issues in this special recreation management area include OHV use, vandalism, firewood collection in the Lost Forest, commercial uses (e.g., wilderness therapy schools), and the increasing visitor pressure in general.

Extensive Recreation Management Areas

In the extensive recreation management areas, management actions to facilitate recreation opportunities are limited primarily to providing basic information and access. People visiting extensive recreation management areas are expected to rely heavily on their own equipment, knowledge, and skills while participating in recreation activities.

The Lakeview Resource Area: The majority of the lands within the LRA are managed as an extensive recreation management area. In fact, recreation activities and facilities in the extensive recreation management area include everything in the LRA except the Warner Wetlands Special Recreation Management Area. All of the WSA's and developed sites (except those associated with the wetlands) are included in the current extensive recreation management area, as are numerous small reservoirs and lakes which are stocked by the ODFW. Several creeks also provide fishing opportunities for rainbow trout. Except for the few facilities in northern Lake County, most of the recreational use is dispersed and occurs primarily during the fall hunting seasons for pronghorn, deer, and elk. ODFW issued approximately 7,500 big game tags (pronghorn, bighorn sheep, deer, and elk) in 1999 for hunt units located in the planning area.

Recreation Opportunity Spectrum

The recreation opportunity spectrum recognizes that people want and need different recreation experiences, and that the resource base has a varying potential for providing recreation experiences. Through recreation opportunity spectrum, management can characterize demand for various types of recreation settings and opportunities, and the capability of the resource to provide such experiences. All possible combinations of recreation experiences, setting, and activity opportunities can be arranged along a spectrum, or continuum. The recreation opportunity spectrum is divided into six classes: primitive, semiprimitive nonmotorized; semiprimitive motorized; roaded natural; rural; and modern urban. Each class is defined in terms of a combination of activity, setting, and experience opportunities (see Appendix M2 and Map R-3).

Recreation opportunity spectrum classes are established as the result of an inventory and are used as an analysis tool in the RMP process. Currently, the LRA has not been inventoried for recreation opportunity spectrum. However, recreation opportunity spectrum could be a tool to be used in developing OHV designations and setting limits for special recreation permits.

Special Recreation Permits

Special recreation permits are authorizations that allow for recreational use of the public lands and related waters. They are issued as a means to manage visitor use, protect natural and cultural resources, provide for the health and safety of visitors, and provide a mechanism to accommodate commercial recreational uses. There are four types of uses for which these permits are required: commercial, competitive, organized groups/events, and individual or group use in special areas.

The LRA authorizes approximately five to eight special

recreation permits every year, including two or three permits which are shared with and administered by adjacent BLM and forest offices. Where possible, commercial operations which cross district or forest lines are administered under one permit, in order to provide "one-stop shopping" for the customer. Currently, the LRA administers one hunting/guiding permit and four wilderness therapy school permits (three of which are shared with the Burns and Prineville Districts). Administration of four additional shared hunting/guiding permits is through the Prineville, Burns, and Vale BLM Districts, and the Fremont National Forest. In addition, LRA staff are aware of commercial and educational tours taking place without proper authorization.

The main workload for permits concerns the four wilderness therapy schools. These schools are designed to benefit adolescents aged 13–18 who are experiencing problems such as substance abuse, depression, oppositional and defiant behavior, and emotional problems. Generally, students are supervised in a remote, nomadic camp setting while learning basic survival skills. The programs are designed to remove the student from their familiar settings and supports and enable them to learn to accept accountability for their actions in an unfamiliar, harsh environment.

Three of the schools operate in northern Lake County and southern Deschutes County; one group operates in eastern Lake County and portions of western Harney County. The four schools, Catherine Freer, TREX, Sage Walk, and Obsidian, have been under permit since 1988, 1996, 1997, and 1998, respectively. Table 2-48 shows the number of students attending these schools since 1988.

Due to the rapid increase in students, particularly in northern Lake County where three of the groups operate, conflicts have occurred concerning public safety, road conditions, runaways, wildlife, and use of resources. Incidents in 1999 and 2000 led to BLM instituting a moratorium on these schools, which prohibits any new schools operating in the LRA and limits the number of students participating in each school.

As visitor use in a recreation area increases, one of the actions that may be taken by the authorized officer is to determine the desired level of use or the carrying capacity. If the use level in the area exceeds the carrying capacity, measures must be taken to remedy the problem. Actions could include limiting the overall number of individuals, the number of groups or parties, or the number of individuals per group.

Off-Highway Vehicle Designations

The "National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands" (BLM 2001) is a comprehensive effort for developing a proactive approach to determine and implement better on-the-ground motorized OHV management solutions designed to conserve soil, wildlife, water quality, native vegetation, air quality, heritage resources, and other resources, while providing for appropriate motorized recreational opportunities. The strategy provides agency guidance and offers recommendations for future actions to improve motorized vehicle management. The implementation of this strategy will be an ongoing, adaptive process that will require the continued cooperation and participation of interested public. As a guiding document, the strategy will be refined and implemented as opportunities arise and funding allows. The strategy will help ensure consistent and positive management of environmentally responsible motorized OHV use on public lands.

OHV use is frequently associated with hunting, fishing, and driving for pleasure, and also occurs for administrative purposes such as livestock management and facility management.

All public land in the planning area is designated as open, limited, or closed in regard to vehicle use. In an open area, all types of vehicle use are permitted at all times. In a limited area, vehicle use is restricted at certain times, in certain areas, to designated routes, to existing routes, or to certain vehicular uses. In a closed area, motorized vehicle use is prohibited. Appendix M1 provides further definition of OHV use terms.

The majority of the LRA (2,510,908 acres) is designated as open to vehicular travel. Through various planning amendments and emergency vehicle closures, several areas have been designated as closed or limited and are shown in Table 2-49 and Map R-2.

Most of the motorized vehicular use occurs on existing roads and unmaintained "jeep trails." However, off-road (cross-country) vehicle use also occurs in intensive use areas, such as the Christmas Valley Sand Dunes, and on isolated tracks dispersed through the planning area. On- and off-road vehicle use occurs within SMA's and critical or important wildlife habitats, cultural sites, and plant sites. Some of this use is

inappropriate or damaging to these special/sensitive areas and resource values.

Visual Resources

Introduction

Visual resources are the land, water, vegetation, structures, and other features that make up the scenery of BLM-administered lands. BLM-administered lands are classified according to their relative worth from a visual resource management (VRM) point of view.

Three factors are considered in developing VRM objectives. These factors are the inherent scenic quality of the landscape, the visual sensitivity the public has for the landscape, and the visual distance (whether the landscape can be seen as foreground, middleground, background, or is seldom seen from a travel route or sensitivity area). Examples of highly scenic areas include Abert Rim, Deep Creek, Camas Creek, and Twentymile Creek canyons. Public lands seen from Highway 140, Highway Well Rest Area, or along a national back country byway are examples of lands highly sensitive to landscape modification.

Scenic quality, sensitivity levels, and distance zones are combined to determine the VRM classes for the area. VRM classes specify management objectives and allow for differing degrees of modification in the basic elements of landscape features (form, line, color, and texture). See Appendix M3 for a detailed description of VRM classification.

Visual management classes are established through the RMP process for all BLM-administered lands. During the RMP process, the class boundaries are adjusted as necessary to reflect resource allocation decisions made in the RMP. Management objectives for each class are designed to mitigate, and in some cases avoid, the adverse effect of management activities on scenic values.

To help maintain the management objectives of a VRM class, the BLM's visual contrast rating system is used for proposed projects and activities to help analyze and mitigate visual impacts to the existing landscape. This systematic process uses the basic design elements of form, line, color, and texture to compare the proposed project/activity with the major features of the existing landscape.

Current Management Classes

Visual management classes in the LRA are compiled from several planning efforts, which took place between 1982 and 1999, as well as new BLM guidance. Unfortunately, detailed records regarding some of this inventory data have been lost and are no longer available. Map VRM-1 shows VRM classes derived from these inventories, as well as updated state and national guidance. Acreages, percentages of the land base, and representative areas in each class are listed in Table 2-50.

Geology and Minerals

Introduction

Past mineral activity in the LRA has included exploration for and production of sand, gravel, rock, cinders, decorative stone, sunstones, and diatomite. Minor amounts of perlite, mercury, gold, lead, and zinc have been produced from scattered sources. Currently, the principal mineral activities in the resource area are the production of gravel and rock for the maintenance of county roads and state highways, and the mining of sunstones, perlite, and diatomite.

There are three designated known geothermal resource areas within the planning area. Most of the planning area has potential for geothermal energy, as indicated by high heat flow. In addition to high heat flow, the Summer Lake/Paisley, south Warner Valley, and Lakeview areas contain hot springs and hot wells. Currently, geothermal energy is used only on private land for heating homes and greenhouses in the Lakeview area and for mineral baths in the Summer Lake area. With anticipated energy shortages in the Pacific Northwest and the focus on global warming, the clean geothermal energy resources that are present beneath the LRA could become more important in the future. It is also anticipated that the demand for mineral material such as sand and gravel for road construction and maintenance will increase. The demand for decorative stone is expected to increase significantly. The potential exists for additional deposits of perlite. These are associated with rhyolitic and dacitic rocks and metals that have been deposited at shallow depths by ascending hot fluids associated with volcanic and hot spring activity.

Appendix N1 has more complete information on historical mining and mineral activity.

Table 2-48.—*Number of students annually in each school*

Year	Catherine Freer	TREX	Sage Walk	Obsidian	Total
1989	9				9
1990	13				13
1991	18				18
1992	4				4
1993	41				41
1994	11				11
1995	24				24
1996	30				30
1997	89	63	20		172
1998	78	65	31		174
1999	135	40	50	39	264

Table 2-49.—*Off-highway vehicle designations*

Designation	Area	Acres
Limited to existing roads and trails	Wilderness study areas (15)	486,873
	Lake Abert ACEC	43,022
	Alkali Lake Dunes	6,813
	Picture Rock Pass	300
Limited to designated roads and trails	Warner Wetlands ACEC	52,950
	Lost Forest RNA	8,960
Closed	Black Hills	1,729
	Crane Mountain	1,057
	Fossil Lake	6,660
	Table Rock	107
	Westside Gravel Pit	121
	Cougar Mountain	44
	Buck Creek Watchable Wildlife Site	590
	South Green Mountain	14
Closed seasonally (12/1–3/31)	Deer Winter Range (Silver Lake and Fort Rock area)	66,460
Open	Remainder of LRA, Sand Dunes WSA	2,510,908

Current Activity

Locatable Minerals

As of September 1999, there were 368 mining claims recorded in the resource area. A total of 295 of these claims are in the Rabbit Basin sunstone area. The remaining claims are in the Tucker Hill perlite area and Christmas Valley diatomite area. Except for sunstone exploration and minor exploration associated with the Christmas Valley diatomite operation, there is no known ongoing locatable mineral exploration. There are no known deposits of critical or strategic minerals

Table 2-50.—*Visual resource management classes*

VRM class	Acres	Percentage of BLM land base	Representative BLM areas
I	493,890	16	Wilderness study areas, research natural areas, Abert Rim corridor.
II	141,429	4	Deep Creek, Twentymile and Twelvemile Creeks, Fish Creek Rim, Table Rock
III	297,78	9	Warner Wetlands ACEC, Highways 140 and 31 corridors, Lake Abert ACEC
IV	2,235,745	71	Seldom seen areas of low visual quality and low sensitivity.

Sources: "Lakeview Grazing Management EIS" (1982); "High Desert Management Plan Plan Amendment" (1996); and "Oregon Wilderness EIS" (1989).

located in the resource area. Existing locatable mineral potential is displayed on Map M-1 and Table 2-50a.

Table 2-51 and Map M-2 display the acres of land where mining is currently restricted or not allowed. Less than 1 percent of the LRA is segregated from mining under the mining laws. This percentage does not include withdrawals where BLM does not have surface management. Including those withdrawals, approximately 10 percent of the Federal land within the boundaries of the LRA is closed to mining. About 2,500 acres in the Rabbit Basin sunstone area are classified closed to mining claim location under the "Classification and Multiple Use Act" of 1964. Mining on about another 423,300 acres of wilderness study areas (WSA's) is restricted in that any work on mining claims located after 1976 must not impair wilderness values per wilderness IMP. Mining plans of operation are required on lands under wilderness study and on approximately 110,300 additional acres of ACEC's designated public land, regardless of the size of the acreage to be disturbed. There are no Public Law 167 mining claims restricting surface resource management. Table 2-51 and Map M-3 display the withdrawals mentioned above, and other restrictions.

Currently, there are no explorations or claims for uranium existing in the LRA. Areas of potential for uranium are displayed on Map M-5. No commercial development of uranium has occurred in the LRA, but has occurred in the Fremont National Forest in the 1950s and 1960s. Concerns about safety of nuclear energy, high cost, and disposal of radioactive waste has limited the demand for uranium. As a result, uranium development is not expected within the life of this plan.

Leasable Minerals

No exploration permits or leases exist in the resource area, and no lands are withdrawn from mineral leasing. However, about 423,300 acres of WSA's are closed to mineral leasing by BLM policy. The only use of leasable-type minerals in the planning area is on private land where geothermal energy is being used for bathing (Paisley and Lakeview areas) and for greenhouse and home heating (Lakeview). Map M-4 and Table 2-52 shows leasable mineral potential in the planning area.

A total of 1,372,940 acres of the public land mineral estate (42 percent) are open to geothermal and oil and gas leasing, subject to standard lease stipulations. About 777,210 acres (21 percent) are open to leasing subject to moderately restrictive stipulations, such as seasonal, OHV, and visual resource restrictions. Approximately 695,000 acres or 24 percent of the mineral estate are subject to a no-surface-occupancy stipulation. Some of the moderately restrictive stipulations overlap with themselves and with the no-surface-occupancy stipulations, so the acres are not necessarily additive.

Of the 113,900 acres of private surface/Federal minerals are under the same moderately restrictive stipulations mentioned in the previous paragraph depending on locations. Depending on the lands, improvements, and terrain involved, additional stipulations could be required.

At present, oil and gas and geothermal leasing is covered by the "Lakeview District Oil and Gas/Geothermal Leasing Environmental Assessment" (USDI-BLM 1981).

Presently, there are no exploration or leases for coal, coal bed methane, oil shale, or tar sands existing in the LRA. The LRA is not considered a potential development area for these resources within the life of this plan. Therefore, as required by 43 CFR 3461, the LRA is considered unacceptable for further consideration for coal, coal bed methane, oil shale, or tar sands development at this time. Leasable mineral potential is described in Appendix N-1.

Salable Minerals

There are an estimated 50 to 100 sand and gravel, rock, and cinder pits on public land in the resource area (Map M-5). Table 2-53 summarizes salable mineral potential acreage. Most of this material is used for construction and maintenance of roads and highways. Lake County and the State of Oregon hold 16 free-use permits, and the State also has 19 pits or quarries and 14 additional storage sites authorized under mineral material site rights-of-way. Sale of mineral materials to individuals averages about 15–20 per year, but appears to be increasing. There are a number of sources for decorative stone scattered across the LRA. The best deposits of decorative stone are located in the Devils Garden Lava Flow. This area contains the highest quality slab lava on the Lakeview District. Because it is within a WSA, the rock cannot be sold at this time. The restrictions on mineral material disposal are generally the same as those for leasing, and are displayed on Table 2-51.

See Appendix N-1 for a discussion of salable mineral potential.

Restrictions to Mineral Exploration, Development, and Production

Generally, BLM-administered land is open to mineral exploration and development under multiple use management principles. However, there are two types of closures that can restrict these activities: discretionary and nondiscretionary.

Discretionary closures are areas where the BLM has determined that energy and/or mineral leasing, entry, or disposal, even with the most restrictive stipulations or conditions, would not be in the public interest. These areas are not formal withdrawals or regulatory closures, and therefore may be changed without going through the withdrawal or regulation modification process. Examples of discretionary closures include BLM land classifications and proposed withdrawals.

Nondiscretionary closures are areas specifically closed to energy and/or mineral leasing, entry, or disposal, by law, regulation, Secretarial decision or Executive order. Examples include BLM and other agency withdrawals. The BLM must petition the Secretary of the Interior to withdraw public lands. Withdrawals of 5,000 acres or more require congressional notification.

Designations such as RNA's and ACEC's, OHV restrictions, cultural resources, and T&E species may constrain mining activities for locatable minerals.

Constraints on leasable and salable minerals would include those for locatable minerals as well as other concerns such as visual resources and crucial deer winter range restrictions. Any special constraints affecting leasable or salable mineral exploration or development would be made a part of the site-specific operating plan. The provision would be attached to the lease, permit, or contract.

Table 2-51 and Map M-2 displays withdrawals, wilderness, recreation and public purposes, and other segregations that restrict mineral activities in the resource area. Table 2-51 shows acres of mineral estate that are open, closed, or otherwise restricted for the three classes of minerals.

Lands and Realty

Lands

Introduction

The LRA administers public lands in Lake and Harney Counties. Three different management framework plans currently direct management of those lands and resources: the "High Desert Management Framework Plan" for public lands generally north of Valley Falls, Oregon, and west of U.S. Highway 395; the "Warner Lakes Management Framework Plan" for public lands generally east of U.S. Highway 395; the "Lost River Management Framework Plan" for those public lands in and adjacent to the Goose Lake Valley. Since approval in 1983, the management framework plans have not been amended or modified relative to the lands and rights-of-way programs.

Existing Conditions

Land Ownership

The LRA encompasses approximately 2,414,336 acres in Lake County, 744,907 in Harney County, and 2,172 acres in Washoe County. About 56 percent of Lake County and about 91 percent of Harney County within the boundaries of the resource area are public land administered by the LRA (BLM files). Table 1-1 shows land ownership and administration in Lake, Harney, and Washoe Counties that exist within the boundaries of the LRA.

The LRA administers lands predominately located in

Table 2-50a.—*Acreage for all locatable mineral potential* [1]

Mineral and potential for occurrence	Acres
Base and precious metals	
High	3,512
Medium	186,026
Low or unknown	3,049,272
Diatomite	
High	31,377
Medium	269,522
Low or unknown	2,937,911
Dolomitic limestone	
High	784
Uranium	
Low	7,087
Unknown	3,231,723
Sunstones	
High	6,252
Perlite	
High	1,367
Medium	3,345
Low or unknown	3,234,098

[1] Includes all Federal and non-Federal mineral ownerships within the planning area boundary. Approximately 25,245 acres of high potential and 268,224 acres of moderate potential exist under Federal mineral ownership within the planning area.

high desert terrain east and west of U.S. Highway 395 (Map I-1). The majority of the public lands are public domain lands (3,080,383 acres) with approximately 81,032 acres of acquired public lands located in the Fort Rock and Warner Valley areas. The resource area also manages an additional 121,000 acres of reserved Federal minerals (no surface ownership) (Map M-6).

The majority of the resource area consists of solidly-blocked public lands with the larger private land blocks occurring in the valleys where the land is more fertile and water available for agricultural production. Rural home sites also occur throughout the agricultural areas with large State land blocks intermingled throughout the areas of solidly-blocked public lands.

Public/Private Land Interface

Generally, the LRA does not have a public/private land interface problem. There are situations throughout the resource area where public and private lands intermingle and create property boundaries which do not conform to logical natural topographic features. This occasionally complicates and increases management costs of such activities as control of prescribed burns, livestock grazing, and the management of key wildlife habitat—but rarely have management activities generated significant controversy.

The "High Desert and Warner Lakes Management Framework Plans" identified approximately 250 acres of public land to be made available for urban-suburban expansion and public purposes. Presently, the resource area has transferred approximately 258 acres out of Federal ownership for this purpose.

Table 2-51.—*Mineral statistics for the Lakeview Resource Area*

Category	Acres (unless otherwise noted)
BLM surface and mineral estate	3,043,900
Reserved mineral estate—no surface, all minerals	113,900
Reserved mineral estate—no surface, partial minerals	7,110
Reserved mineral estate—all surface, partial minerals	700
Acquired minerals—Bankhead-Jones lands [1] (estimated)	73,200
Community pits (#)	0
Free use permits (#)	16
Material site right-of-way-pits/quarries (#)	19
Material site right-of-way storage sites (#)	14
Mining claims (#)	368
43 CFR 3809 mining/exploration notices (#)	27
43 CFR 3809 mining/exploration plans (#)	2
43 CFR 3802 mining/exploration plans (#)	0
43 CFR 3715 occupancies (#)	15
Known geothermal resource areas	
Number	3
Total acres	111,500
Public land acres	50,400
Geothermal leases (# and acres)	0
43 CFR 3209 exploration notices	0
Oil and gas leases (# and acres)	0
43 CFR 3151 geophysical notices (#)	0
Other mineral leases, permits	0
Withdrawals (BLM)	
Leasable and locatable	0
Locatable only	16,200
Nonmetalliferous mining only	1,900
Withdrawals (other agency) [2]	
Leasable and locatable	0
Locatable only	272,000
Wilderness study segregations (leasable/salable)	423,300
C&MU Act segregation (locatable only)	2,500

[1] Bankhead-Jones lands are lands that went into private owner ship but later reverted back to the government.
[2] The BLM does not have surface management jurisdiction on these lands, so they are not officially covered by this land use plan. However, the lands represent significant Federal acres within the planning area that are closed to mining. The BLM has mineral leasing responsibility on these lands, none of which are included in subsequent tables.

Land Use Classifications/Recreation and Public Purposes Act

The resource area has one existing land use classification for the Sunstone Collection Area (2,500 acres); no applications are pending which would require new classifications. Historically, the majority of the resource area was under a classification for multiple use. The "High Desert and Warner Lakes Management Framework Plans" specifically identified the need for four recreation and public purpose leases—three for county sanitary landfill sites and one for civil defense purposes. To date, all these classifications have been terminated because the classifications were no longer necessary or the land has been disposed of.

Table 2-52.—*Acres for all leasable mineral potential* [1]

Mineral and potential for occurrence	Acres
Geothermal resources	
High	114,073
Medium	2,327,341
Low	1,784,565
Lakebed evaporites	
High	107,871
Medium	254,994
Low	639,689
Oil and gas	
Medium	2,631,475
Low	1,594,505

[1] Includes all Federal and non-Federal mineral ownerships within the planning area boundary. Approximately 114,309 acres of high potential and 2,708,184 acres of moderate potential exist under Federal mineral ownership within the planning area.

Table 2-53.—*Acreage for salable mineral potential*

Mineral and potential or occurrence	Acres
Cinders	
High	1,128
Unknown	3,237,682
Decorative Stone	
High	42,458
Medium	320
Unknown	3,196,032
Quarry Rock	
High	331
Unknown	3,238,479
Sand/Gravel	
High	1,220
Medium	852
Low or unknown	3,236,738

Lands Identified for Disposal

The "High Desert, Warner Lakes, and Lost River Management Framework Plans" on land tenure identified approximately 52,425 acres of public land for disposal, pending site-specific environmental analysis and soil and water studies (Map L-1). If the parcels are found suitable for disposal, a land classification would be issued that states this information (refer to the criteria governing land tenure adjustments found in Appendix O1). Presently, the LRA has disposed of approximately 8,040 acres of those lands identified. Refer to Table O2-1, Appendix O2, Alternative A, for the legal descriptions of those public lands remaining available for disposal.

The previously mentioned management framework plans did not specifically address areas subject to exchange unless a proposal was active at the time of writing. Typically, under the present planning system, land exchanges are evaluated for plan conformance and viability on a case-by-case basis. The "Warner Lakes Management Framework Plan" did identify the need to complete the North Warner State (Oregon) Exchange. However, since the acreage was unknown at planning time, the management framework plan did not specifically identify the acreage involved. To date, the LRA has completed five exchanges totaling approximately 21,300 acres.

Lands Identified for Acquisition

To date, acquisition of non-Federal lands by the LRA has been considered only in the "Warner Lakes Plan Amendment for Wetlands and Associated Uplands" to the "Warner Lakes Management Framework Plan." The plan amendment specified that private lands within the designated wetlands area will be acquired only through voluntary willing sellers or exchange proponents, as opportunities arise. Since implementation of the plan amendment, the LRA has successfully acquired approximately 10,340 acres within the Warner Wetlands.

Access (Easement) Acquisition

Currently, access to public land in the LRA has not been a significant problem, since physical access is readily available to most areas. However, there are several hundred locations throughout the LRA, representing possibly thousands of individual easements, where legal access rights could be acquired. Generally, the LRA pursues easement acquisition on a case-by-case basis as determined by necessity.

Unauthorized Occupancy and Use

Unauthorized occupancy and use is not a significant problem in the LRA. No known unauthorized occupancies exist and approximately 24 unauthorized use situations are presently identified in the "High Desert, Warner Lakes, and Lost River Management Framework Plans." Unauthorized occupancies are typically encroachments of buildings or yards onto public land and have usually existed for many years. These situations are most often discovered in the course of surveying projects. Unauthorized agricultural uses typically involve the encroachment onto small areas of public land from agricultural operations on adjoining private land; unauthorized right-of-way situations generally involve negligence. Resolution of such situations depend upon individual circumstances and may include issuance of temporary land use permits, leases or rights-of-way, disposal of the land either by sale or exchange, or removal of the unauthorized use.

To date, all of the 24 unauthorized use situations identified in previous land use plans have been reviewed and all but 3 have been resolved. Many of the unauthorized uses involved fenced Federal range. Fenced Federal range results when small portions of Federal land are within fenced private lands. These were resolved by adjusting the grazing permits of those applicable permittees. Several of these fenced Federal range situations, although technically authorized, have been identified for disposal in order to effect permanent resolution. Additional unauthorized uses are expected to be discovered periodically as the new surveys, field inspections, and public observations continue throughout the resource area. See Table 2-56 for the legal descriptions of fenced Federal range sale situations.

Temporary Authorizations

There are, at any particular time, approximately three to five temporary land use permits in effect that authorize such activities as trespass prior to resolution, access, hay storage, apiary sites, national guard or military reserve training, engineering feasibility studies, and other miscellaneous short-term activities.

Withdrawals

A withdrawal is a formal action that accomplishes one or more of the following actions:

- Transfers total or partial jurisdiction of Federal land between Federal agencies.
- Segregates (closes) Federal land to some or all of the public land laws and/or mineral laws.
- Dedicates land for a specific public purpose.

There are three major categories of formal withdrawals: (1) congressional withdrawals, (2) administrative withdrawals, and (3) "Federal Power Act" or Federal Energy Regulatory Commission (FERC) withdrawals.

1) *Congressional withdrawals:* are legislative withdrawals made by Congress in the form of public laws (acts of Congress).

2) *Administrative withdrawals:* are made by the President, Secretary of the Interior, or other authorized officers of the executive branch of the Federal government.

3) *"Federal Power Act or" FERC withdrawals:* are power project withdrawals established under the authority of the "Federal Power Act" of 1920. Such withdrawals are automatically created upon filing of an application for a hydroelectric power development project with FERC.

The LRA contains 12 existing withdrawals. Table 2-57 lists the existing withdrawals along with the authority, location, acreage, purpose, segregative effect, and surface management agency.

The LRA has two Power Site Reserves (numbers 265 and 429) located within the Deep Creek Watershed, either along Deep Creek and/or its tributaries. In the early 1990s, two applications were filed with FERC for possible pumped storage development at Lake Abert. The applications were subsequently withdrawn. Although hydropower development potential in the LRA is considered low, it may be feasible with today's technology and under current energy market conditions. The LRA would consider all future proposals for hydropower development as they arise.

Rights-of-way

There are six major right-of-way corridors presently traversing the LRA. Three of the corridors contain large (500+ kilovolt) power transmission lines, one running east-west, north of Summer Lake and south of Christmas Valley, Oregon; a second north-south corridor traverses east of Fort Rock and Silver Lake, Oregon; and a third corridor running north-south, east of Christmas Valley and west of Adel, Oregon. The remaining three corridors are occupied by State Highways 31 and 140 and U.S. Highway 395.

The existing management framework plans identify several right-of-way exclusion and avoidance areas (Map L-2). The future upgrading of existing transmission lines is likely and may require additional right-of-way width. Existing communication sites are listed in Table 2-58. All, with some restrictions, have the potential for future expansion; the Mahogany Mountain site is currently unoccupied. Demand for additional communications capabilities is expected to result in requests to establish new sites in the future.

Alternative Energy Resources

The LRA has received inquiries regarding areas with the potential for wind farm development. Areas such as Christmas Valley, Coyote and Rabbit Hills, and South Warner Rim may have potential. Currently, the Oregon Office of Energy holds a wind monitoring site right-of-way on South Warner Rim. Although the LRA does not have any specific areas identified for development at the present time, all future proposals would be considered.

The LRA may have some potential for the development of solar energy. To date, the LRA has not received any inquiries regarding the development of solar energy. Any future inquiries would be considered as they arose.

Roads/Transportation

Approximately 2,500 miles of roads are on the LRA road inventory. However, based on the number of roads shown on USGS maps and aerial photographs, it is estimated that another 2,500 of roads and ways not on the inventory also exist on the public land. These roads are used by BLM personnel for administrative access, by ranchers and other permittees, and by the general public seeking recreation opportunities.

In an effort to assist in setting priorities for future watershed and road analyses (potentially required by any decision resulting from the ICBEMP planning effort), road density classes were computed by watershed for all watersheds within the four main subbasins within the planning area. Existing road data was classified in accordance with road density classes defined by the ICBEMP. Almost all of the planning area is in the very low to medium road density. Very low road density is 0.02 to 0.10 miles of road per square mile of land; low road density is 0.11 to 0.70 miles per square mile; and medium is 0.71 to 1.70 miles per square mile. About 2,000 acres in the northwest corner of the planning area are classified in the high road density. High density is 1.70 to 4.70 miles per square mile. This information is displayed on Map R-4.

The resource area maintains approximately 100 miles of roads each year. Roads are maintained at various levels, depending on maintenance needs, funding, and the need for the road. The assigned maintenance level reflects the need for the road and appropriate maintenance that best fits the transportation management objectives for planned management activities. Roads

Table 2-56.—*Fenced Federal range disposal opportunities*

Parcel	Legal description	Acreage
Agriculture	T.40S., R.20E., W.M., Oregon	
	Section	
	8: NW¼NE¼.	40
Ditch	T.40S., R.20E., W.M., Oregon	
	Section	
	24: W½SW¼.	10
Thousand Springs Ranch	T.30S., R.17E., W.M., Oregon	
	Section	
	24: W½SE¼.	80
	T.30S., R. 18E., W.M., Oregon	
	Section	
	18: Lot 4;	40.75
	19: Lot 2.	40.85
Paulina Marsh	T.28S., R.14E., W.M., Oregon	
	Section	
	3: Lot 4;	40.25
	4: Lot 1.	40.26
	T.28S., R.15E., W.M., Oregon	
	Section	
	17: SW¼ NE¼.	40
Oatman Flat	T.27S., R.13E., W.M., Oregon	
	Section	
	34: SW¼,NE¼, NW¼, SE¼.	80
Church Ranch	T.28S., R.16E., W.M., Oregon	
	Section	
	15: W½SW¼;	80
	21: NW¼ NW¼.	40
Vaughn Ranch	T.28S., R.15E., W.M., Oregon	
	Section	
	11: NW¼ SE¼;	40
	12: NW¼ SW¼, SW¼ SE¼;	80
	14: NW¼ NE¼, S½NW¼;	120
	15: NE¼ SE¼.	40
Main Ranch	T.27S., R.18E., W.M., Oregon	
	Section	
	13: W½SW¼.	80
	T.27S., R.19E., W.M., Oregon	
	Section	
	7: Lot 3, E½SW¼;	120.76
	29: SW¼ SW¼;	40
	30: SW¼ NE¼, SE¼ NE¼, E½SW¼, W½SE¼, SE¼	280
	SE¼;	160
	31: NE¼;	360
	32: E½E½, W½W½, SE¼ SW¼;	200
	33: W½W½, SE¼ SW¼.	

Table 2-57.—*Existing withdrawals*

Authority [1]	Location			Acres [2]	Purpose	Segre-gative effect [3]	Surface manage-ment agency
	Township	Range	Section				
E.O. 4/17/1926	30	23	25	40	Public Water Reserve107	A	BLM
	32	23	14	40			
	36	22	7	40			
	38	24	31	10			
	40	23	28	30			
	40	29	6	29.63			
			7	80			
	40	28	1	20			
	41	24	21	2.5			
			22	2.5			
			Subtotal	294.63			
E.O. 1/24/1914	31	27	7	80	Public Water Reserve 15	A	BLM
	38	25	29	260.32			
	23	19	10	160			
	26	18	29	39.31			
			32	4.82			
			33	96.02			
	26	19	8	120			
			17	40			
	26	20	6	60.29			
			Subtotal	860.76			
E.O. 6/13/1925	38	23	29	40	Public Water Reserve 91	A	BLM
	40	23	7	14.45			
			18	64.97			
			Subtotal	119.42			
E.O. 5/8/1930	38	23	29	80	Public Water Reserve 131	A	BLM
			32	120			
			Subtotal	200			
E.O. 2/25/1919	40	22	10	100	Public Water Reserve 61	A	BLM
			25	40			
			Subtotal	140			
E.O. 4/29/1912	40	22	8	40	Power Site Res. 265	C	BLM

Authority [1]	Location			Acres [2]	Purpose	Segre-gative effect [3]	Surface manage-ment agency
	Township	Range	Section				
			9	40			
			Subtotal	80			
E.O. 4/3/1914	39	22	25	80	Power Site Res. 429	C	BLM
	39	23	19	129.27			
			30	135.63			
			Subtotal	344.90			
SO 9/8/1910	28	14	21	80	Administrative site	B	USFS
			28	80			
			Subtotal	160			
PLO-5235 7/14/72	25	20	20	8,960	Research natural area	B	BLM
			21				
			22				
			23				
			24				
			25				
			26				
			27				
			28				
			29				
			30				
			31				
			32				
			33				
			34				
			35				
			36				
			Subtotal	8,960			
PLO-6745 8/28/89	26	20	19	2,622	Radar site	B	USAF
			30				
			31				
			32				
	27	20	5				
			6				
			Subtotal	2,622			

Authority [1]	Location: Township	Range	Section	Acres [2]	Purpose	Segre-gative effect [3]	Surface manage-ment agency
PLO 300 10/25/1945	30	16	13	7,127.65	Wildlife reserve	B	BLM
			24				
			25				
			36				
	30	17	17				
			18				
			19				
			21				
			28				
			29				
			30				
			31				
			32				
			33				
	31	16	1				
	31	17	4				
			5				
			6				
			7				
			8				
			9				
			Subtotal	7,127.65			
PLO 7446 5/18/00	33	18	11	80	Seed orchard	B	USFS
		Resource area total		20,989.36			

[1] Authority abbreviations: E.O. = Executive order; S.O. = Secretarial order; PLO = Public land order.
[2] Table does not include lands that have been transferred out of Federal ownership subsequent to withdrawal.
[3] Segregative effect: A = withdrawn from operation of the general land laws and closed to nonmetalliferous mining (cement quality limestone, diatomite etc.), but open to metal mining (gold, silver, and mercury etc.). B = withdrawn from operation of the general land laws and the mining laws. C = withdrawn from the general land laws.

are prioritized for maintenance needs.

Level 1: This level is assigned to roads where minimum maintenance is required to protect adjacent lands and resource values. These roads are no longer needed and are closed to traffic. The objective is to remove these roads from the transportation system. Emphasis is on maintaining drainage and runoff patterns as needed to protect adjacent lands. Grading, brushing, or slide removal is not performed unless roadbed drainage is being adversely affected, causing erosion. Currently, there are no Level 1 roads on the resource area's transportation plan.

Level 2: This level is assigned to roads where the management objectives require the road to be opened for limited administrative traffic. Typically, high-clearance vehicles are necessary for passage. Grading is conducted as necessary to correct drainage problems. Brushing is done to allow administrative access. Approximately 1,600 miles of Level 2 roads are on the transportation plan.

Level 3: This level is assigned to roads that need to be

Table 2-58.—*Existing communication sites*

Communication site	Legal description
Mahogany Mountain	T.29S., R.14E., W.M., Oregon Section 15: SE¼.
Table Rock	T.28S., R.15E., W.M., Oregon Section 12: NW¼.
Paisley	T.34S., R.20E., W.M., Oregon Section 16:
Coyote Hills	T.35S., R.22E., W.M., Oregon Section 11: NE¼.
Plush	T.38S., R.24E., W.M., Oregon Section 4: NE¼.
Fish Creek Rim	T.39S., R.24E., W.M., Oregon Section 17: NW¼.

open seasonally or year-round for commercial, recreation, or high volume administrative access. Generally, these roads are natural- or aggregate-surfaced, but may include low-use asphalt-surfaced roads. These roads have defined cross section with drainage structures such as dips, culverts, or ditches. These roads may be used by passenger cars traveling at a reasonable speed. Drainage structures are inspected at least annually and maintained as needed. Grading is done to provide a reasonable level of comfort and safety. Shoulder brushing is done to improve sight distance. Any obstructions affecting drainage would be high priority for removal. At the present time, approximately 550 miles of Level 3 roads are on the transportation plan.

Level 4: This level is assigned to roads that management direction requires to be open all year, unless they are closed or have limited access due to snow conditions. These roads connect major administrative facilities such as recreation sites, local road systems, or administrative sites to county, state, or Federal roads. They may be single or double lane, aggregate or asphalt surface, with a higher volume of commercial and recreational traffic than administrative (BLM or permittees) traffic. These roads should be maintained annually if possible. However, because of annual road maintenance funding limitations in the District, not all Level 4 roads are maintained each year. A total of 385 miles of Level 4 roads are currently on the transportation plan.

Level 5: This level is assigned to roads that need to be open all year and are the highest traffic volume on the transportation system. These roads may be closed or have limited access due to snow conditions. The entire roadway is maintained at least annually. There are no Level 5 roads on the resource area's transportation plan.

New roads may be constructed by BLM or by a permittee in connection with a project such as mineral development or a rights-of-way. In the past 10 years, no new roads have been constructed. However, approximately 6 to 8 miles of new ways have been developed in connection with the development of wells, pipelines, and fences. These ways have not been constructed with heavy equipment but have resulted from the passage of vehicles.

Hazardous Materials

Introduction

All incidences of hazardous materials on public land are handled as outlined in the Lakeview District's contingency plan of April 1999. All actions related to land or minerals are reviewed both internally and externally (if appropriate) for compliance with Federal and state regulations. Special stipulations are also developed as part of the permit or lease to safeguard human health, prevent environmental damage, and limit BLM liability.

The hazardous materials program will be managed in the same general manner in all alternatives in accordance with laws, policies, and regulations. Consequently, the hazardous materials program will not be addressed further.

Existing Conditions

Alkali Lake Chemical Waste Disposal Area

The 10.3-acre storage site in Lake County, Oregon, is owned, operated, and monitored by the ODEQ. The Alkali Lake Chemical Waste Disposal Area was the storage site for 25,000, 55-gallon drums of distillation residue from the manufacturing of herbicide during 1967 to 1971. During studies that were done in the 1970s and 1980s, hazardous substances such as chlorophenoxphenols, chlorinated phenols, chlorinated dibenzodioxns, and chlorinated dibenzofurans were found in the soil and groundwater near the Alkali Lake Chemical Waste Disposal Area. The contaminates have been transported off-site by wind and water.

Land surrounding the Alkali Lake Chemical Waste Disposal Area is federally-owned public land that is open to multi-resource activities such as cattle grazing, hunting, hiking, and general public recreation. As of spring 1998, the groundwater contamination plume was detected on this public land 1,500 feet west of the 10.3 acres that ODEQ originally fenced around the disposal area. Besides the contamination of groundwater, another potential impact is to the Hutton tui chub, a 30,000-year-old fish species which is on the USFWS T&E list.

In 1990, the BLM and ODEQ took additional steps to protect the public by fencing out the area of known groundwater contamination in West Alkali Lake. This site was part of the EPA's national dioxin study in 1984, but no risk assessment was performed at that time. The BLM has proposed potential ACEC nomination of public lands surrounding the 10.3 acres, but it was determined that those lands were not suitable for ACEC designation.

Chapter 3 — Management Alternatives

Introduction

The development of management alternatives for the Lakeview Resource Management Plan/Environmental Impact Statement (Lakeview RMP/EIS) was guided by the legal authorities and planning criteria listed in Appendix B1. These included the "National Environmental Policy Act" (NEPA) and Bureau of Land Management (BLM) planning regulations and policy. Five management alternatives were developed to address the management issues. The purpose of developing alternatives was to prepare different combinations of resource uses to address the identified issues and management concerns and to resolve conflicts among uses. A range of resource management actions and allocations was developed for resources related to identified issues. There are only small differences among alternatives in regard to resource uses not tied to issues.

Resource Management Plan Goals

The mission of the BLM is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. In order to accomplish that mission, BLM has developed a strategic plan ("BLM Strategic Plan 2000–2005") containing a comprehensive set of broad goal statements and a subset of mission goals. Two goal statements and subset of mission goals dealing with public land management are shown below. (The complete "BLM Strategic Plan 2000–2005" is available at the BLM web site: www.blm.gov/nhp/info/stratplan.)

1) Serve current and future publics.

- Provide opportunities for environmentally responsible recreation.
- Provide opportunities for environmentally responsible commercial activities.
- Preserve natural and cultural heritage resources.
- Reduce threats to public health, safety, and property.
- Provide land, resource, and title information.
- Provide economic and technical assistance.

2) Restore and maintain the health of the land.

- Understand and plan for the condition and use of the public lands.
- Restore at-risk resources and maintain functioning systems.

The Lakeview RMP/EIS is also responsive to the goals developed by the Interior Columbia Basin Ecosystem Management Project (ICBEMP). Five goals were developed for the project and were carried forward into the 2000 Final EIS. The goals are broad general statements of intent that were derived from the Purpose and Need statement, issues identified through the initial scoping processes, and the ICBEMP project charter. Project goals are:

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

2) Provide a predictable, sustained flow of economic benefits within the capability of the ecosystem.

3) Provide diverse recreational and educational opportunities within the capability of the ecosystem.

4) Contribute to recovery and delisting of threatened and endangered (T&E) species.

5) Manage natural resources consistent with treaty and trust responsibilities to American Indian Tribes.

Based on the BLM "Strategic Plan," the ICBEMP goals, and the issues identified for the Lakeview RMP/EIS planning area, the following goals were developed for the Lakeview RMP/EIS.

1) Manage for long-term sustainability and, where necessary, restore the health of the forest, rangeland, aquatic, and riparian ecosystems in the planning area.

2) Manage sensitive species and communities to ensure long-term viability, and promote delisting of T&E species.

3) Provide recreational, educational, and research opportunities within the capability of the planning area ecosystem.

4) Provide a predictable, sustained flow of economic

benefits within the capability of the planning area ecosystem.

5) Manage resources on the planning area to meet treaty and trust responsibilities to local American Indian Tribes.

Ecosystem Management

As described by ICBEMP "Summary of Scientific Findings" (USDI-BLM 1996a): "Ecosystem management is scientifically-based land and resource management that integrates ecological capabilities with social values and economic relations to produce, restore, or sustain ecosystem integrity and desired conditions, uses, products, values and services over the long term. . . ." Ecosystem management "concentrates on overall ecosystem health and productivity through an understanding of how different parts of the ecosystem functions with each other, rather than on achieving a set of outputs. Human activities, including social values regarding use of public lands and biophysical components, are part of the total picture.

A major part of the ICBEMP was the gathering, organizing, and understanding information at the basin scale. In order to apply the findings of ICBEMP to the local level, i.e. the Lakeview RMP/EIS area, management must go through a step-down process. Step-down is the process of applying broad-scale science findings and land use decisions to site-specific areas using a hierarchical approach of understanding current resource conditions, risks, and opportunities (USDA-FS and USDI-BLM 2000). Information thus developed provides the context for understanding how projects can be developed that meet multiple management objectives.

The ICBEMP describes four levels of analysis below the basin-level analysis that are intended to provide the context to appropriately implement these broad-level decisions on individual national forests or BLM districts:

1) *Subregional analysis*—programmatic or broad overview EIS such as RMP.

2) *Mid-scale analysis*—subbasin review.

3) *Watershed-scale analysis*—ecosystem analysis at the watershed scale.

4) *Site-specific NEPA analysis*—project environmental assessment (EA) or EIS.

In order to better define issues and to identify ICBEMP findings applicable to the LRA and adjacent Federal lands, the resource area staff conducted a subbasin review between August 1, 1999 and March 1, 2000. Subbasin review, the second layer of the step-down process, is an intergovernmental process tiering mid- and fine-scale information to ICBEMP findings, goals, objectives, and standards. It is also an assessment of ecosystem processes and functions at the subbasin level. Appendix A1 contains a summary of the subbasin review process as well as a summary of ICBEMP findings applicable to the resource area. The review was conducted by an interdisciplinary, interagency group led by the LRA staff. Other participants included representatives from other BLM offices, U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), Oregon Department of Fish and Wildlife (ODFW), state government, local government, and Indian Tribes.

The "Analysis of the Management Situation" (available at the LRA office) serves as the complete subbasin review report. Findings and recommendations from the subbasin review are carried forward into the RMP/EIS in the issues to be resolved and in the alternatives identified to resolve those issues. These findings and recommendations are identified in Appendix A1.

Rangeland Health and Health of the Land Strategy

The alternatives analyzed in this RMP/EIS include management direction intended to complement or support, rather than replace, "Standards for Rangeland Health and Guidelines for Livestock Grazing Management" (USDI-BLM 1997a), known as the Healthy Rangelands Initiative. These standards and guidelines were developed by the Oregon/Washington BLM State Director in consultation with the affected resource advisory councils in the two states. They were approved by the Secretary of the Interior in August 1997. In addition, Oregon/Washington BLM developed "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" (1998). These standards were based on the standards for rangeland health with the intent that they would apply to all BLM-administered lands and not just rangelands.

The fundamentals of rangeland health stated in 43 CFR 4180 include four elements: watersheds, ecological processes, water quality, and plant and animal habitats. The standards for land health are based on these four fundamentals with the addition of an air quality ele-

ment. The objectives of the land health standards are to promote healthy sustainable ecosystems; to accelerate restoration and improvements of public land to properly functioning conditions; and to provide for the sustainability of industry and communities that depend upon productive, healthy public lands.

The alternatives analyzed in this RMP/EIS incorporate the principle that cumulative effects of all management activities, including federally authorized activities, determine whether the standards for land health would be achieved. Consequently, the effects of livestock grazing are not the only concern.

The "Standards for Rangeland Health and Guidelines for Livestock Grazing Management" and the "Standards for Land Health" are shown in Appendix E4.

Desired Range of Conditions

Introduction

The desired range of conditions described below apply to all alternatives. The desired range of conditions portrays the land, resource, or social and economic conditions that would begin to be established in 20 to 50 years if management goals are achieved. The length of time to achieve the desired range of conditions would vary by alternative depending on the resources involved, the theme of the alternative, and the management actions proposed under that alternative.

The desired range of conditions reflect the "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" BLM developed. These standards are expressions of the physical and biological condition or degree of function necessary to sustain healthy ecosystems. The following desired range of conditions are descriptions of what the physical and biological condition or degree of function would be or be moving toward at the end of the 20 to 50-year timeframe. The desired range of conditions have been factored into the management goals of each resource management program.

Description of Desired Range of Conditions

Rangeland vegetation (sagebrush steppe) includes a mosaic of multiple-aged shrubs, forbs, and native perennial grasses. Shrub overstories are present in a variety of spatial arrangements and scales across the landscape level, including disjunct islands and corridors. Shrub overstories are present in predominantly mature, late-structural status. Plant communities not meeting desired range of conditions show upward trends in condition and structural diversity. Desirable plants continue to improve in health and vigor. New infestations of noxious weeds are not common across the landscape, and existing large infestations are declining. Populations and habitat of rare plant species and their associated communities are stable or continue to improve in vigor and distribution.

Large portions of the landscape have a protective soil cover of deep-rooted plants and litter which supports proper hydrologic function. In thin-soiled areas and other appropriate soils, microbiotic crusts are present which increase soil stability, contribute to nutrient cycles, and act as indicators of rangeland health.

Treated commercial (mostly pine) forests contain healthy stands of site-appropriate species. Stands are relatively open, with density within site capacity. Low-intensity fires can be accommodated without excessive loss of trees, and insect and disease occurrence is at endemic levels.

Western juniper dominance is restricted to rocky outcrops, ridges, and other historic (old growth) sites where wildland fire frequency is limited by lower site productivity and sparse fuels. Western juniper occurs in low densities in association with vigorous shrubs, grasses, and forbs (where site potential permits). Historic western juniper sites retain old growth characteristics. Quaking aspen groves occupy historic range and are in stable or improving condition.

Rangeland vegetation and water sources support viable, healthy herds of wild horses through time. Individual herds have diverse age structures, good conformation, and are quality animals exhibiting the characteristics unique to each herd. Wild horse numbers are in balance with the rangelands that support them. Improvements in grass/shrubland steppe and riparian areas increase the health of the herd.

The amount and diversity of wildlife habitat are maintained or improved through time. Late-seral grass/shrublands exist in blocks of various sizes in well-distributed patterns across the landscape. Ongoing management of rangeland habitat components and conditions (such as vegetation cover, forage, and roads) and of key areas helps to maintain big game populations near State wildlife agency objectives. Hunting opportunities continue to be provided throughout the planning area. Improvement in the condition of grass/shrubland steppe and riparian areas benefits a variety of wildlife species by increasing the quality, quantity,

and variety of habitat. Such species include upland game, raptors, and nongame species. Management has helped to create the long-term habitat changes that contribute toward restoring some sensitive species and toward recovery of listed species.

The area provides a wide variety of recreational opportunities for a growing demand, as the population increases and urban dwellers seek to experience the open spaces commonly found on public land. Additional recreation facilities, restored and maintained recreation sites, and more intensive management are a few of the means used to meet the increased demand. Protection of the natural landscape is an important consideration when designing recreation facilities and planning for related activities. Certain areas are excluded from recreational development to preserve their natural character.

Special management areas (SMA's), such as wilderness, wild and scenic rivers (WSR's), and areas of critical environmental concern (ACEC's), preserve the integrity of special or unique values over the long term.

Upland soils have sufficient vegetation cover to minimize accelerated soil erosion. Physical and chemical soil properties are adequate for vegetation growth and hydrologic function appropriate to the specific soil type, landform, and climate.

Wildland and prescribed fire play an active role in defining the composition of vegetation and limit the dominance of woody species including shrubs and invasive juniper.

Riparian areas and stream habitat conditions have improved as a result of protection and management. Watersheds are stable and provide for capture, storage, and safe release of water appropriate to soil type, climate, and landform. Most riparian/wetland areas are stable and include natural streamflow and sediment regimes related to contributing watersheds. Soil supports native riparian/wetland vegetation to allow water movement, filtration, and storage. Riparian/wetland vegetation structure and diversity are significantly progressing toward controlling erosion, stabilizing streambanks, healing incised channels, shading water areas, filtering sediment, aiding in floodplain development, dissipating energy, delaying floodwater, and increasing recharge of ground water appropriate to climate, geology, and landform. Stream channels are narrower, water depth and channel meanders are increasing, and floodplains are developing. Stream channels and floodplains are making significant progress in dissipating energy at high-water flows and transporting and depositing sediment as appropriate for geology, climate, and landform. Riparian/wetland vegetation is increasing in canopy volume (height and width) and in healthy uneven-aged stands of key woody plants, increasing in herbaceous ground cover, and shifting toward late succession. Surface disturbances inconsistent with the physical and biological processes described above have been reduced. Disturbances such as roads, dispersed recreation sites, and inappropriate livestock use are decreasing as vegetation and soils recover naturally. There is no downward trend in riparian condition and function.

Human use of natural resources is managed to enhance fisheries, improve water quality, and promote healthy riparian conditions. Water quality is managed so that most streams are providing cool, clear, and clean water. High-quality water is in greater demand from all users. Better regulation of runoff has improved the water supply from rangelands. There is increased infiltration on upland sites, increased ground water recharge, increased spring flow, reduced peak flow during floods, and increased stability of base flow during late summer and winter.

Management activities have been implemented on nearly all sites at risk to erosion to facilitate recovery of upland, riparian, aquatic, and water quality conditions. Improved aquatic habitat conditions allow populations of T&E aquatic species to stabilize and expand into appropriate, previously occupied habitat. Populations of native aquatic species are increasing.

Water quality is improved to provide stable and productive riparian and aquatic ecosystems. Water quality of perennial and fish-bearing streams is within State standards, and the remaining streams have made significant progress toward attaining those standards. Upland, riparian, and aquatic ecosystems are stable and productive to a degree that leads to acceptable water quality for identified beneficial uses. Improvement has occurred in stream channel integrity and channel processes, under which the riparian and aquatic systems developed. Hydrologic and sediment regimes (the characteristic behavior or orderly occurrence of a natural phenomenon or process) in streams, lakes, and wetlands are appropriate to the surrounding soils, climate, and landform. Instream flows are sufficient to support healthy riparian and aquatic habitats, and stream functions are stable and effective. Flooding streams discharge without significant damage to the watershed.

Riparian vegetation provides sufficient vegetation debris; provides adequate regulation of air and water

temperatures during both summer and winter; and helps reduce surface erosion, bank erosion, and channel migration to levels characteristic of natural conditions. Riparian and aquatic habitats support populations of well-distributed native and desired nonnative plant, vertebrate, and invertebrate populations.

Adaptive Management

Adaptive management is a procedure in which decisions and changes in management are made as part of an ongoing process. It is a continuous process of planning, implementing, monitoring, evaluating, and incorporating new information into strategies to meet the goals and objectives of ecosystem management as described in the RMP. This process builds on current knowledge, observation, experimentation, and learning from experience. A continuous feedback loop allows for mid-course corrections in management to meet planned goals and objectives. It also provides a model for adjusting goals and objectives as new information develops and public desires change.

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

The following briefly describes the four parts of adaptive management:

1) *Planning/Decision*—plan development or revision is the process leading to decision-making. It starts with issue identification and goal development. The next step is to gather information necessary to develop alternatives for management direction that address the issues and goals. The final stage of planning is to develop alternative management strategies to address issues and meet the management goals, analyze the consequences of the alternatives, and choose a preferred alternative for implementation.

2) *Implementation*—the process of putting plans and decisions into effect. Implementation includes short- and long-term actions taken to meet goals and the desired range of conditions. Unless otherwise stated, all management direction listed here is assumed to be implemented within 10 years. Standards are defined as required management actions addressing how to achieve management goals; and standards can include requirements to refrain from taking action in certain situations.

3) *Monitoring*—should detect changes early enough so management activities can be modified to work toward achieving management goals. Monitoring data provide information on the condition and trend of the ecosystem and can indicate if goals and objectives are being met. They also can identify management strategies that appear to be working in the short term. Monitoring data would be collected to determine if plan objectives are being met.

4) *Evaluation/Assessment*—the point where plans and monitoring data are reviewed. This phase of adaptive management is used to judge the success of existing plans in meeting goals and objectives, and makes recommendations for mid-course corrections. The understanding gained through evaluations is critical to managing sustainable, healthy, and productive ecosystems. Evaluations are a key component of the adaptive management process. An evaluation may lead to a change in management actions to continue toward the goals identified in the approved RMP and resulting activity plans.

Periodic evaluations are key components of adaptive management. Implementation of this plan will be monitored to allow an up-to-date response to changing conditions. Activity plan decisions would be evaluated to ensure consistency with management goals. As part of the evaluation process, other government agencies would be asked to review the approved RMP and advise the BLM of continued consistency with their plans, programs, and policies. Upon completion of periodic evaluations, or in the event that modifying the plan becomes necessary, the Lakeview District Manager would determine what, if any, changes are necessary to ensure that management actions are consistent with management goals. If it is determined that a plan amendment is necessary, an environmental assessment of the proposed change would be conducted and a recommendation on the amendment made to the BLM State Director. If approved, the amendment may be implemented after a 30-day public notice period. A plan amendment may be initiated because of a need to consider monitoring findings, new data, new or revised policy, or a proposed action that may result in a change in the terms, conditions, or decisions of the approved plan.

Minor changes, refinements, or clarifications in the plan are maintenance actions that incorporate data changes. Plan maintenance actions would not expand the scope of resource uses or restrictions or change the terms, conditions, or decisions of the approved Lakeview RMP/EIS. Maintenance actions are not considered plan amendments and do not require formal public involvement and interagency coordination.

In developing the Lakeview RMP/EIS, the BLM staff used the best science currently available including the scientific assessment from the ICBEMP. The staff also collaborated with other Federal, state, local, and Tribal government agencies, and involved the public. However, the agency's knowledge would change as the public's desires change, as local environmental conditions change, as new management techniques are learned, and as advances in science and technology are better understood. As a result, it is inevitable that in the future some of the management direction in the RMP would be found to be inadequate or incorrect. To rectify such situations, implementation of the Lakeview RMP/EIS decision would use an adaptive management approach in a continual process to modify management actions to incorporate new knowledge gained over time.

Ecosystem Analysis at the Watershed Scale

The watershed scale is the third layer in ecosystem analysis and planning. Where management actions could have a watershed-scale effect, ecosystem analysis at the watershed scale would be used, if necessary, to assure potential actions are evaluated with an overall understanding of the capabilities and limitations of specific watersheds. Information gained through analysis at this scale would be used in the adaptive management process, and may support land management decisions and development of ecologically sustainable programs and projects. Appendix F contains a description of the watershed analysis process.

The RMP provides the management goals and direction for ecosystem analysis at the watershed scale in terms of issues to be addressed and desired range of conditions to be achieved through management actions.

During the subbasin review, the team identified several watersheds that are priorities for restoration (see Water Resources/Watershed Health section, Common to All Alternatives subsection). The following is a description of the criteria used to prioritize watersheds and the process that would be used to change priorities, if necessary. Work would focus on higher priority areas; however, other areas may require attention to address site-specific needs.

- Legal mandates ("Clean Water Act" [CWA], "Endangered Species Act," etc.);
- Resources at risk;
- Potential for recovery;
- Resource conflicts or controversy;
- Opportunity for interagency or partnership assessments;
- Field staff knowledge of the area;
- Current ongoing management; and
- Broad-scale priorities (identified in ICBEMP as a priority subbasin or key watershed for various reasons).

Watersheds would be reviewed periodically to determine if there have been any changes in resource issues, BLM policies and regulations, or other concerns that would warrant a needed change in the priorities.

Monitoring

The BLM planning regulations (43 CFR 1610.4-9) call for the monitoring of resource management plans on a continual basis with a formal evaluation done at 5-year intervals. The Lakeview RMP/ElS would be monitored on a continual basis to allow up-to-date evaluations and to respond to changing situations. Management actions arising from activity plan decisions would be evaluated to ensure consistency with RMP/ElS objectives.

A detailed monitoring and evaluation plan would be published with the Proposed RMP/Final EIS. It will guide how the RMP/EIS would be formally evaluated at intervals not to exceed 5 years. All plan monitoring would assess:

1) Whether management actions are resulting in satisfactory progress toward objectives;

2) Whether actions are consistent with current policy;

3) Whether original assumptions were correctly applied and impacts correctly predicted;

4) Whether mitigation measures are satisfactory;

5) Whether the RMP is consistent with the plans and policies of state and local government, other

Federal agencies and Indian Tribes; and

6) Whether new data are available that would require alternation of the plan.

Monitoring is an essential component of natural resource management because it provides information on the relative success of management strategies. The implementation of the RMP would be monitored to ensure that management actions (1) follow prescribed management direction (implementation monitoring), (2) meet desired objectives (effectiveness monitoring), and (3) are based on accurate assumptions (validation monitoring).

Monitoring is integral to the management approaches described herein such as adaptive management and ecosystem management.

Monitoring results would provide managers with the information to determine whether an objective has been met, and whether to continue or modify the management direction. Findings obtained through monitoring, together with research and other new information, would provide a basis for adaptive management changes to the plan. The processes of monitoring and adaptive management share the goal of improving effectiveness and permitting dynamic response to increased knowledge and a changing landscape. The monitoring program itself would not remain static. The monitoring plan would be periodically evaluated to ascertain that the monitoring questions and standards are still relevant, and would be adjusted as appropriate. Some monitoring items may be discontinued and others may be added as knowledge and issues change with implementation.

If monitoring and evaluation indicate that modifying the plan is necessary, the Lakeview Resource Area (LRA) District Manager would determine what, if any, changes are necessary to ensure that management actions are consistent with RMP objectives. If the district manager finds that a plan amendment is necessary, an environmental assessment of the proposed change would be conducted and a recommendation on he amendment made to the State director. If approved, it may be implemented 30 days after public notice. A plan amendment may be initiated because of need to consider monitoring findings, new data, new or revised policy or a proposed action that may result in a change in the scope of resource uses or a change in the terms, conditions and decisions of the approved plan.

Potential minor changes, refinements, or clarifications in the plan may take the form of maintenance actions. Maintenance actions incorporate minor data changes and are usually limited to minor refinements and documentation. Plan maintenance would not result in expansion of the scope of resource uses or restrictions or change the terms, conditions and decisions of the approved RMP. Maintenance actions are not considered plan amendments and do not require a formal public involvement and interagency coordination process.

Watershed analysis is one of the principal analyses that would be used to meet the ecosystem management objectives. Information from watershed analysis would also be used in developing monitoring strategies and objectives. Specific to monitoring, the results and findings from watershed analyses are used to reveal the most useful indicators for monitoring environmental change, detect magnitude and duration of changes in conditions, formulate and test hypotheses about the causes of the changes, understand these causes and predict impacts, and manage the ecosystem for desired outcomes. Watershed analysis would provide information about patterns and processes within a watershed and provide information for monitoring at that scale.

The monitoring process would collect information in the most cost-effective manner, and may involve sampling or remote sensing. Monitoring could be so costly as to be prohibitive if it is not carefully and reasonably designed. Therefore, it would not be necessary or desirable to monitor every management action or direction. Unnecessary detail and unacceptable costs would be avoided by focusing on key monitoring questions and proper sampling methods. The level and intensity of monitoring would vary, depending on the sensitivity or the resource or area and the scope of the proposed management activity.

RMP monitoring would be conducted at multiple levels and scales. Monitoring would be conducted in a manner that allows localized information to be compiled and considered in a broader regional context, and thereby address both local and regional issues. At the project level, monitoring would examine how well specific management direction has been applied on the ground and how effectively it produces expected results. Monitoring at broader levels would measure how successfully projects and other activities have achieved the objectives for those management areas.

Monitoring would be coordinated with other appropriate agencies and organizations in order to enhance the efficiency and usefulness of the results across a variety of administrative units and provinces. The approach would build on past and present monitoring work. In addition, specific monitoring protocols, criteria, goals,

and reporting formats would be developed, subject to review and guidance of the Regional Ecosystem Office. This guidance would be used to augment and revise the monitoring plan and facilitate the process of aggregating and analyzing information on provincial or regional levels.

Monitoring results would be reported in an annual program summary (such as the "Lakeview Planning Update"), which would be published starting the second year following initial implementation of this plan. The annual program summary would track and assess the process of plan implementation, state the findings made through monitoring, specifically address the implementation monitoring questions posed in each section of this monitoring plan, and serve as a report to the public.

The resource area would be responsible for the collection, compilation, and analysis of much of the data gained through monitoring activities. The resource area would report its findings and recommendations to the District for consolidation and publication in the annual program summary.

Overview of the Alternatives

Alternatives Considered but Eliminated from Detailed Analysis

No Management Alternative

During development of the alternatives, a no management alternative was discussed. This alternative is not the same as the no action alternative. This alternative would include no grazing, no gathering of wild horses, no suppressing of wildland fires, and no managing recreation uses. The team determined that this alternative was not acceptable because "The Wild Horse and Burro Act" requires that wild horse herds be maintained in a thriving ecological balance with their environment. If horses were not gathered, they would eventually deplete their habitat. In addition, the "Taylor Grazing Act" requires the Secretary of the Interior "to provide for the orderly use, improvement, and development of the range." Some fire suppression would be necessary to protect private property and to protect human health and safety. Since the resource area would still be open to dispersed recreation use, a minimal amount of recreation management would be required to protect human health and safety.

This alternative is not considered further in the plan; however, some aspects of it, such as no livestock grazing, are incorporated into Alternative E.

Proposed High Desert Protection Act

A protection act for the High Desert has been proposed by various organizations for a number of years to protect the natural resources of the High Desert of eastern Oregon. The proposed legislation includes various actions including removing livestock grazing to protect resources.

Some components of this proposal were built into various alternatives of this document, particularly Alternatives C and E. The proposed legislation itself cannot be considered an alternative as it would require congressional approval and such approval is speculative. Should approval ever occur, it would likely require revision or amendment of the RMP and would be addressed at that time. Therefore, it is not considered further in this plan.

Designation of the Proposed Pronghorn ACEC

In 1998, the Oregon Natural Desert Association and 22 other cosponsoring organizations nominated 1.1 million acres of BLM-administered lands surrounding and connecting Hart Mountain National Antelope Refuge and Sheldon National Wildlife Refuge as an ACEC. Major management actions of the proposal included removing livestock grazing, removing wild horses, and facilitating movement of pronghorn herds in the area.

The proposal was evaluated by biologists and other resource specialists from Oregon Department of Fish and Wildife (ODFW), U.S. Fish and Wildlife Service (UFWS), and BLM offices of Burns and Lakeview Districts in Oregon, Winnemucca District in Nevada, and the Surprise Resource Area in California. The evaluation concluded that the entire proposed area as a whole did not meet ACEC criteria, and therefore is not considered further in this plan. However, portions of the area within the LRA were found to meet the ACEC criteria in previous evaluations and are being considered in the alternatives analyzed in detail. Refer to the Areas of Critical Environmental Concern section of this document for more information. The goals and objectives of the Pronghorn ACEC would be largely met under Alternative E. The complete Pronghorn ACEC proposal and the evaluation report can be viewed on the LRA website at www.or.blm.gov/lakeview/planning.

Alkali Lake

A proposal was made internally that the BLM-administered land surrounding the Alkali Lake hazardous waste site should be designated an ACEC. The area does not meet the ACEC criteria, there is no immediate danger to human health, and it represents a man-made rather than a natural hazard; therefore, the proposal is not considered further in this plan.

Wilderness Study Area Boundary Reductions

The Lake County Commissioners have suggested an alternative to look at changing two wilderness study area (WSA) boundaries along State Highway 140. This highway runs from north of Lakeview, east and south to the Nevada state line. The Oregon Department of Transportation (ODOT) is currently improving sections of the highway, and in the summer of 2000 completed a rerouting, widening, and resurfacing project on approximately 10 miles of the highway. The purpose of the project is to improve safety on the highway and allow its use by tractor-trailer trucks over 65-feet long. Similar work is planned within the next 5 years on other sections of the highway.

Two sections which are proposed for improvement in the future are on or near the boundaries of two WSA's—Fish Creek Rim and Spaulding. The highway right-of-way, not the highway itself, forms the boundary of the Spaulding WSA. In the case of the Fish Creek Rim WSA, the right-of-way for the 69 kilovolt powerline on the north side of the highway forms the boundary.

ODOT would be free to do work at their discretion within the designated highway right-of-way. Any work outside the right-of-way, such as realignment of the highway, would require modification of the right-of-way grant and preparation of an environmental analysis document. Since the Fish Creek Rim WSA is set back approximately 100 to 1,000 feet from the highway, it is not known at this time if any realignment of the road could impact the WSA. Any potential impact can only be determined when an actual project is proposed, complete with detailed maps showing a proposed realignment. However, BLM cannot authorize any work that would impact the wilderness qualities of either of the areas, nor can BLM change the size or boundaries of the two WSA's in order to accommodate any widening, straightening, or rerouting of the highway. Any changes to the existing boundaries of these or any other WSA's can only occur through congressional legislation. Therefore, it is beyond the scope of this plan to change the boundaries of any WSA's in the planning area. Hence, this alternative is not considered further in this plan.

Alternatives Analyzed in Detail

The planning team has composed the Lakeview RMP/EIS in such a way that the reader would be able to readily track the management goals, management actions, and monitoring needs. Every decision proposed through the planning process is actually a string of components. Primary among these components are management goals and management actions. Associated with the decision components are support components such as rationale and monitoring needs. The following material defines and expands upon these various components.

> *Management goal*—the desired result of management efforts. The goals must resolve or move toward resolving the management issues driving preparation of the RMP.
>
> *Rationale*—primary reasoning behind why it is important to pursue the stated management goal.
>
> *Monitoring needs*—monitoring of the resources is conducted to determine whether or not the identified management goals are being accomplished.
>
> *Management actions*—measures that are to be undertaken in order to attain or achieve the stated management goal and resolve the management issues stated in Chapter 1.

Five alternatives are described and analyzed in detail in the Lakeview RMP/FEIS. Each alternative consists of four general elements. The first element is the overall theme, ranging from emphasis on commodity production to emphasis on natural processes and natural systems. The second consists of each of the individual resources or resource programs (e.g., Air Quality, Water Resources/Watershed Health, Plant Communities, Livestock Grazing Management, etc.). The third consists of the individual management goals within each of the resource programs. The fourth is the collection of management actions necessary to achieve the individual management goals of each resource program. Each of the resource-specific management actions is considered in combination with all other goals and actions to arrive at a desired range of conditions. The overall themes thus determine the types of management actions that would be applied.

Alternatives, with the exception of Alternative E in some cases, would generally meet the goals that have been identified for all resources. However, there are differences between alternatives. These differences have to do with how fast the management goal is being met, the degree to which it is being met, the priorities within the program, the emphasis placed on different management activities and whether those actions are active or passive, and identifying what society is willing to forego. Some areas can be improved with additional funding to implement active restoration methods, some with management changes or passive restoration methods, and some with a combination of both.

Integrated resource management was emphasized in formulating the alternatives. A primary concern was that all major ecological and socioeconomic systems be fully recognized through the selection of specific management actions. Public input received throughout the planning process was considered in the development of alternatives.

The management goals associated with the alternatives may not be completely met over the life of the plan (up to 20 years). Funding and staffing levels would affect rates of implementation, and projected implementation rates may vary from alternative to alternative, depending on the cost of prescribed management activities.

Management Common to All Alternatives

All alternatives would incorporate or comply with the management direction and protections provided by the Warner sucker biological opinion agreements, the "Recovery Plan for the Threatened and Rare Fishes of the Warner Basin and Alkali Subbasin;" the "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington;" and the 1995 "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP). Most alternatives would incorporate the "Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Management Guidelines" (2000).

Local Native American Tribes would be consulted for all actions which may affect their interests. Cultural resource surveys and sensitive species surveys, would be conducted prior to any ground disturbing activity or land disposal.

Management Themes of the Alternatives

Following is a description of the five alternatives considered in detail.

Alternative A

Alternative A is the continuation of present management or no action. This alternative would continue management under the three existing management framework plans), the "Lakeview Grazing Management Final EIS and Record of Decision," and the three management framework plan amendments and various existing activity plans. It would also include the management direction and protections provided by the Warner sucker biological opinion/agreements, and any currently approved activity plans such as allotment management plans or habitat management plans. Resource values or sensitive habitats would receive management emphasis as at present levels. Emphasis would be on maintaining existing conditions. There would be no comprehensive plan for restoration of degraded systems. Restoration would be on a case-by-case basis and would utilize either active or passive methods.

Alternative B

Alternative B would emphasize commodity production and production of public goods and services (mining, grazing, commercial recreation, and commercial woodland products harvesting, etc.) would be emphasized. Under this alternative, constraints on commodity production for sensitive resources would be the least restrictive possible within the limits defined by law, regulation, and BLM policy, including compliance with the "Endangered Species Act," cultural resource protection laws, wetland preservation, etc. Potential impacts to sensitive resource values would be mitigated on a case-by-case basis. Emphasis would be on maintaining existing conditions. Restoration actions that would enhance commodity production would utilize primarily active methods. Other restoration actions would utilize passive methods.

Alternative C

Alternative C emphasizes the restoration of natural systems that are degraded and the maintenance of those that are functioning at a high level of condition. Commodity production would be constrained to protect natural values and systems that are in good or better ecological condition or to accelerate improvement in those that are in less than good condition. Constraints to protect sensitive resource would be the most restrictive. In some cases and in some areas, commodity production could be excluded to protect sensitive

resources. Both active and passive restoration methods would be utilized to achieve management goals.

Alternative D (Preferred Alternative)

Alternative D is the BLM's preferred alternative. This alternative emphasizes a high level of natural resource protection and improvement in ecological conditions while providing commodity production. This alternative would balance the need to protect, restore, and enhance natural values, with the need to provide for the production of food, fiber, minerals, and services on the public lands. This would be done within the limits of the ecosystem's ability to provide these on a sustainable basis and within the constraints of various laws and regulations. Constraints to protect sensitive resources would be implemented, but they would be less restrictive than under Alternative C. Restoration actions would utilize either active or passive methods to achieve management goals.

Alternative E

This alternative would exclude all permitted, discretionary uses of the public lands including livestock grazing, mineral sale or leasing, realty actions, recreation uses requiring permits, commercial rights-of-way, etc. The resource area would petition the Department of the Interior (DOI) to withdraw the entire planning area from locatable mineral entry. This alternative would allow no commodity production and would include only those management actions necessary to maintain or enhance natural values and protect life and property. Any management actions would utilize primarily passive methods. Some components of the alternative may not be possible to implement because of legal constraints, but the alternative is included for purposes of impact comparison.

Detailed Descriptions of Alternatives

Table 3-1 summarizes the major management actions proposed for each alternative, organized by resource or resource program. The narrative following the table states the management goal and rationale for each goal, and, where necessary, provides a more detailed description of management actions by alternative. The effects of these management actions by alternative result in the projected environmental consequences analyzed in Chapter 4.

Table 3-1.—*Summary of resource management actions by program*

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
PLANT COMMUNITIES				
Shrub Steppe				
Management Goal 1—*Restore, protect, and enhance the diversity and distribution of desirable vegetation communities, including perennial native and desirable introduced plant species. Provide for their continued existence and normal function in nutrient, water, and energy cycles.*				
1. Improve ecological condition and increase forage production through the development and implementation of economically feasible grazing systems and range improvements.	1. Optimize forage production from vegetation communities within the constraints of other resource management objectives.	1. Emphasize natural values associated with the diverse composition and structure of vegetation. Minimize forage production and range improvements.	1. Maintain or restore natural values while providing for forage production.	1. Allow natural processes to define vegetation composition across the landscape.
2. Maintain vegetative composition of nonnative seedings to ensure continued forage production for the purpose established.	2. Restore existing nonnative seedings in poor or fair condition. Maintain the vegetative composition of healthy rangeland to ensure continued forage production consistent with other management.	2. Implement actions to diversify structure and composition of nonnative seedings with emphasis on natural values and other resource objectives (i.e., wildlife) which may include reestablishment of native species.	2. Implement actions to diversify structure and composition of nonnative seedings. Provide for and maintain forage production consistent with other resource objectives.	2. Allow natural processes to define vegetation composition.
3. Implement vegetation manipulation projects consistent with existing management objectives. Rehabilitate or revegetate areas burned by wildland fire to protect soil, water, and vegetation resources.	3. Rehabilitate plant communities that are not meeting desired range of conditions due to dominance by annual or weedy species, or invasive juniper. Use seed mixes of native and nonnative species.	3. Same as for Alternative A, but use seed mixes limited to native perennial species only.	3. Same as for Alternative A, but use mix of seeds to include forage-producing native and nonnative perennials.	3. Allow natural processes to define vegetation composition within all plant communities. Wildland fires would not be rehabilitated.
4. Rest reseeded areas from livestock grazing for a minimum of two growing seasons following rehabilitation.	4. Same as for Alternative A, except that healthy nonnative perennial communities may be grazed prior to two growing seasons only if consistent with management objectives.	4. Rest reseeded areas from livestock grazing for a minimum of 2 years following rehabilitation.	4. Same as for Alternative A.	4. Prohibit livestock grazing.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
Management Goal 2—*Protect healthy, functioning ecosystems consisting of native plant communities. Restore degraded high-potential landscapes and decadent shrublands.*				
Complete restoration projects on a case-bay-case basis with emphasis on disturbed sites.	Restore degraded landscapes, decadent shrublands, and disturbed sites with emphasis on increasing livestock forage production.	On a watershed basis, maintain functioning native plant communities, improve plant structure and diversity in degraded communities, and protect and restore microbiotic crusts. Emphasize locally grown or locally adapted native seed mixes.	Same as for Alternative C, except that nonnative plant species may also be used.	Restoration determined by natural processes.
Riparian/Wetland Vegetation				
Management Goal—*Restore, maintain, or improve riparian vegetation, habitat diversity, and associated watershed function to achieve healthy and productive riparian areas and wetlands.*				
1. Manage riparian/wetland areas without specific designation or delineation.	1. Identify and delineate riparian conservation areas for management.	1. Same as for Alternative B.	1. Same as for Alternative B.	1. Riparian conservation areas not identified and delineated.
2. In any riparian/wetland area, uses or activities could occur if they allow progress toward the attainment or maintenance of proper functioning condition as a precursor to desired range of conditions.	2. Same as for Alternative A.	2. From a watershed perspective, uses or activities would be allowed if they have no effect on riparian conservation areas, or if they promote progress toward the attainment of proper functioning condition and riparian management objectives.	2. From a watershed perspective, uses or activities would be allowed in the riparian conservation areas and contributing watersheds if such activities allow progress toward the attainment of proper functioning condition and riparian management objectives.	2. Any noncommodity uses and activities would be allowed in the associated watershed if they have no effect on riparian conservation areas, or if they promote progress toward the attainment of proper functioning condition and riparian management objectives.
3. Restoration projects would be implemented in those areas where conditions are not naturally recovering or are currently functioning but are at risk of degradation.	3. Restoration projects would be implemented in those areas where conditions are not naturally recovering, as long as they do not interfere with commodity production.	3. Same as for Alternative A.	3. Same as for Alternative A.	3. No restoration projects would be implemented.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
4. Grazing systems and exclusion on riparian/wetland areas would be determined on a case-by-case basis to promote or maintain proper functioning condition on a minimum of 75% of these areas.	4. Implement or maintain grazing systems that promote the recovery or maintenance of riparian systems to proper functioning condition.	4. Exclude livestock from all riparian areas.	4. Implement or maintain grazing systems that promote the recovery or maintenance of riparian systems to desired range of conditions based on site potential.	4. No grazing authorized; therefore, no grazing would occur on any riparian area.
5. Maintain current spring developments, and construct new developments/waterholes as identified in the existing plans.	5. Modify existing spring developments to allow riparian function while still allowing for livestock water availability	5. Rehabilitate all spring developments, returning all flow to the original channels that are being impacted by the development.	5. Same as for Alternative B.	5. Spring developments would no longer be maintained.
6. Construct new and maintain existing livestock water developments in intact playas and lakebeds.	6. Allow new livestock water developments in intact playas and lakebeds only if development does not negatively impact T&E wildlife or plant species.	6. Collect baseline data on 10–15 developed playa/lakebeds to determine feasibility of wetland restoration or enhancement.	6. Same as for Alternative C, except allow no new livestock water developments in intact playas and lakebeds, and collect baseline data on all developed playas/lakebeds to determine feasibility of wetland restoration or enhancement.	6. Maintain the current developed livestock waters where critically needed for wildlife use.
7. Roads could be maintained to minimize impacts to riparian zones.	7. Same as for Alternative A.	7. Remove all roads from riparian conservation areas.	7. Remove from riparian conservation areas any roads that are impacting the stream and/or riparian zone.	7. No management would occur.
Forest and Woodlands				
Management Goal 1—*In commercial (pine) forest stands, maintain or restore forest health and meet wildlife habitat needs.*				
Manage commercial forests to maintain forest health and wildlife habitat needs.	Same as for Alternative A.	Same as for Alternative A.	Same as for Alternative A.	No stand treatments would be done. Natural processes would occur.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
Management Goal 2—*Restore productivity and biodiversity in western juniper woodlands and quaking aspen groves.*				
1. Manage western juniper woodlands to meet public demand for timber and vegetative products (including fuelwood, posts, poles, boughs, and berries). Restrict western juniper control in certain areas.	1. Maximize allowable commercial and public harvest within existing wood cutting areas and by establishing additional areas. Treat up to 75% of areas of early- to mid-successional stands of western juniper by fire or other means to increase forage production over life of the plan.	1. Emphasize protection of resource values. Allow commercial and public wood cutting on up to 10% of the mid- to closed-canopy stands of western juniper to meet resource objectives. Treat up to 75% of early- to mid-successional stands using prescribed fire or other means over the life of the plan.	1. Allow commercial and public wood cutting on up to 50% of the mid- to closed-canopy stands to meet resource objectives over the life of the plan. Treat up to 50% of the early- to mid-successional stands using prescribed fire or mechanical cutting over the life of the plan.	1. Prohibit commercial or public wood cutting/harvest. Allow natural processes (including wildland fire) to operate in western juniper woodlands.
2. Reserve all snags and old, decadent trees from cutting to provide wildlife habitat.	2. Maintain or enhance existing old growth stands.	2. Same as for Alternative B.	2. Same as for Alternative B.	2. Allow natural processes to occur in existing old growth stands.
3. Manage quaking aspen to meet riparian and wildlife objectives.	3. Early in the life of the plan, treat all quaking aspen stands being invaded by western juniper.	3. Same as for Alternative B.	3. Same as for Alternative B.	3. Allow natural processes to occur in quaking aspen stands.

SPECIAL STATUS PLANT SPECIES

Management Goal—*Manage public lands to maintain, restore, or enhance populations and habitats of special status plant species. Priority for the application of management actions would be: (1) Federal endangered or threatened (T&E) species, (2) Federal proposed species, (3) Federal candidate species, (4) State listed species, (5) BLM sensitive species, (6) BLM assessment species, and (7) BLM tracking species. Protect, restore, and enhance the variety of plant species and communities in abundance and distributions that provide for their continued existence and normal functioning.*

1. Ensure that management actions do not contribute to the decline of special status species.	1. Same as for Alternative A.	1. Same as for Alternative A, except manage for desired range of conditions by using a mix of restoration and enhancement measures for special status species. Use protection and maintenance measures only where there are no opportunities for restoration or enhancement.	1. Same as for Alternative C, except that protection of habitats or populations would have equal management weight with restoration and enhancement.	1. Allow natural processes to operate, except for federally listed species as specified in recovery plans.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
2. Emphasize management that is driven by the requirements of individual species.	2. Same as for Alternative A.	2. Emphasize land management that fosters overall community health, habitat integrity, and landscape-level issue resolution, as well as meeting the requirements of individual species.	2. Same as for Alternative C.	2. Allow natural processes to operate.
3. Develop and implement conservation agreements to protect and monitor special status species.	3. Same as for Alternative A.	3. Same as for Alternative A.	3. Same as for Alternative A.	3. Allow natural processes to operate.
4. Manage one area (Lost Forest 9,047) acres) meeting Oregon Natural Heritage Plan (ONHP) cell needs as a research natural area (RNA)/ACEC.	4. Same as for Alternative A	4. Designate 11 areas (128,327 acres) and retain one area (Lost Forest 9,047 acres) meeting ONHP cell needs as RNA/ACEC's.	4. Same as for Alternative C	4. Allow natural processes to operate with no RNA/ACEC designations

NOXIOUS WEEDS AND COMPETING UNDESIRABLE VEGETATION

Management Goal—*Control the introduction and proliferation of noxious weeds and competing undesirable plant species and reduce the extent and density of established populations to acceptable levels.*

1. Continue to apply integrated management. Emphasize disturbed areas such as roads, rights-of-way, and recreation sites. Emphasize detecting new invaders.	1. Increase inventory and detection to protect commodity resources.	1. Implement zero tolerance for noxious weeds. Increase inventory and detection; eradicate noxious weeds and restore all existing sites. Treat undesirable species and restore where necessary.	1. Same as for Alternative A, but with an increased emphasis on restoration and expanded efforts to inventory and detect new infestations.	1. Treat only high priority areas of noxious weeds to protect adjacent private property.
2. Continue public education in local area.	2. Increase public education efforts.	2. Expand public education to include areas outside of Lake County.	2. Emphasize increased public education efforts to include areas outside Lake County.	2. No weed education efforts would occur.
3. Continue Abert Rim Weed Management Area plan.	3. Develop and implement a Greater Abert Weed Management Area plan.	3. Same as for Alternative B.	3. Same as for Alternative B.	3. No plan would be developed.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
SOILS				
Management Goal—***Manage soil on public lands to maintain, restore, or enhance soil erosion class and watershed improvement and protect areas of fragile soil using best management practices (BMP's).***				
1. Protect and manage soils and implement BMP's through NEPA on a project-by-project basis.	1. Protect and manage soils by implementing BMP's on all potentially surface-disturbing activities.	1. Same as for Alternative B.	1. Same as for Alternative B.	1. Same as for Alternative B.
WATER RESOURCES/WATERSHED HEALTH				
Management Goal 1—***Protect or restore watershed function and processes which determine the appropriate rates of precipitation capture, storage, and release.***				
1. Maintain or improve watershed condition where needed, as previously identified in land use plans.	1. Maintain stable watershed condition and improve watershed condition where needed. Use active restoration techniques where appropriate.	1. Maintain good watershed condition and improve watershed condition where needed.	1. Same as for Alternative C.	1. Allow natural processes to restore watershed condition.
2. On a case-by-case basis, close unnecessary roads or where resource damage is occurring. Construct and maintain roads to minimum standards.	2. Close roads not needed for commodity use or damaging commodity resources. Construct new roads to meet BMP's.	2. Close and rehabilitate all roads on public lands not required by law. Do not increase the road density in any watershed with a low road density. Minimize new road construction.	2. On a case-by-case basis, close and rehabilitate all roads on public lands not needed for private land access, permit administration, law enforcement, or fire protection.	2. Close and rehabilitate all roads on public lands except those required by law. Allow no new roads except when required by law.
3. Continue existing upland grazing systems and exclosures.	3. Manage upland livestock grazing to meet minimum standards.	3. Manage livestock grazing to promote healthy watershed which include productive soil, native vegetation, and biological crusts. Prohibit management activities and uses, except when mandated by law, in perennial and intermittent drainages where such activities would adversely impact watershed function or processes.	3. Manage livestock grazing to maintain minimum conditions of a healthy watershed which include mostly productive soils, native vegetation, and some biological crusts.	3. Exclude livestock grazing from the resource area. Remove existing exclosures.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
Management Goal 2—*Ensure that surface water and groundwater influenced by Bureau of Land Management (BLM) activities comply with or are making significant progress toward achieving State of Oregon water quality standards for beneficial uses as established by the Oregon Department of Environmental Quality (ODEQ).*				
1. Maintain or improve water quality where needed, as previously identified in land use plans. Continue to manage for water quality improvement.	1. Focus evaluation and mitigation specifically on management actions and uses occurring in surface water and the associated riparian conservation areas.	1. Consider uses and activities occurring in surface waters and their entire associated watersheds. Where State water quality standards are not being met due to management on BLM-administered land, allow only uses in the associated watershed that allow progress toward the attainment of State water quality standards.	1. Same as for Alternative C.	1. Consider all noncommodity uses and activities occurring in surface waters and their entire associated watersheds. Where State water quality standards are not being met due to management on BLM-administered land, allow only used that progress toward the attainment of State water quality standards.
2. Implement the CWA by restoring and maintaining the physical, biological, and chemical integrity of the Nation's waters.	2. Same as for Alternative A.	2. Same as for Alternative A.	2. Same as for Alternative A.	2. Same as for Alternative A.
3. Meet water quality standards established by ODEQ.	3. Same as for Alternative A.	3. Same as for Alternative A.	3. Same as for Alternative A.	3. Allow natural process to determine water quality.
4. Continue existing grazing systems and exclosures on streams, springs, riparian areas and wetlands; and make changes where needed.	4. For water quality limited segments, grazing management would be permitted along streams and riparian and wetland areas only if they would allow progress toward attainment of water quality standards.	4. For streams with water quality limited segments, grazing management would be allowed in the watershed only if they would promote or have no effect on restoring water quality to State water quality standards.	4. Same as for Alternative C.	4. Exclude livestock grazing from the resource area. Remove existing exclosures.
5. Work with State of Oregon to develop total maximum daily loads and subsequent water quality management plans's for BLM-administered lands.	5. Same as for Alternative A.	5. Same as for Alternative A.	5. Same as for Alternative A.	5. Same as for Alternative A.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
FISH AND AQUATIC HABITAT				
Management Goal—*Restore, maintain, or improve habitat to provide for diverse and self-sustaining communities of wildlife, fishes, and other aquatic organisms.*				
1. Provide habitat for fish and other aquatic organisms to maintain the distribution of primarily native species among subwatersheds while providing opportunities for commodity uses.	1. Provide habitat for fish and other aquatic organisms important to commodity uses (such as recreation or commercial), but not at the risk of causing extinction of any native species within its range.	1. Provide habitat for fish and other aquatic organisms that maintain the distribution of native species among subwatersheds and support all native species needed for self-sustaining aquatic communities.	1. Same as for Alternative A.	1. Allow natural processes to determine instream processes and habitat diversity, water quality, riparian condition, and species diversity and distribution.
2. Focus management specifically on the protection of riparian/wetland areas.	2. Same as for Alternative A.	2. For any surface water that provides aquatic habitat, uses or activities would be allowed in its associated watershed if they have no affect on aquatic habitat or if they promote progress toward attainment of aquatic habitat objectives.	2. Same as for Alternative C.	2. Allow natural processes to determine aquatic habitat condition.
3. Continue modified management of selected sites to improve stream condition.	3. Use management and structural methods to remedy limiting habitat components.	3. Same as for Alternative B.	3. Same as for Alternative B.	3. Allow natural processes to determine the level of habitat conditions and limiting factors.
4. Work with ODFW to manage recreational fishing and in developing new opportunities with consideration to native fish.	4. Cooperate with the ODFW in maintenance and development of recreational fishing opportunities.	4. Cooperate with the ODFW in maintenance and development of recreational fishing opportunities as long as they do not impact native fish species.	4. Same as for Alternative C.	4. Recommendations to the ODFW for fish management would be to only allow natural processes with no artificial developments or stocking.
5. Continue to manage selected sites with grazing management specifically designed for riparian improvement. Develop other sites on a case-by-case basis.	5. Implement grazing systems that allow for improvement or maintenance of riparian conditions to proper functioning condition standards on fish bearing streams.	5. Implement grazing systems, including exclusion, that maximize improvement of riparian conditions to standards based on site potential.	5. Implement grazing systems, including exclusion, that promote improvement or maintenance of riparian conditions to standards based on site potential.	5. Grazing would not be allowed under this alternative.
6. No allowance has been made for acquisition of water rights unless they are attached to an acquired parcel.	6. No water rights would be acquired unless it improved commodity production.	6. Acquire water rights for conversion to instream use when an opportunity exists.	6. Same as for Alternative C.	6. No water rights would be acquired.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
WILDLIFE AND WILDLIFE HABITAT				
Management Goal 1—*Facilitate the maintenance, restoration, and enhancement of bighorn sheep populations and habitat on public land. Pursue management in accordance with Oregon Department of Fish and Wildlife (ODFW) "Oregon's Bighorn Sheep Management Plan" in a manner consistent with the principles of multiple use management.*				
1. Bighorn sheep are managed within areas as identified in ODFW's bighorn sheep management plan.	1. Same as for Alternative A.	1. Same as for Alternative A.	1. Same as for Alternative A.	1. Allow bighorn sheep to occupy areas based on natural dispersal and population growth.
2. Maintain, restore, or enhance bighorn sheep habitat within existing and proposed reintroduction areas.	2. Maintain, restore, or enhance bighorn sheep habitat in existing and proposed reintroduction areas within commodity production limits.	2. Restore, enhance, or maintain bighorn sheep habitat within existing and proposed reintroduction areas.	2. Same as for Alternative C.	2. Allow natural processes to determine bighorn sheep habitat.
Management Goal 2—*Manage big sagebrush cover to meet the life history requirements of sagebrush-dependent wildlife.*				
In cooperation with ODFW, determine variable desired conditions of big sagebrush cover on a case-by-case basis to benefit game and nongame species.	Reestablish big sagebrush habitat where economically important wildlife are present.	Manage big sagebrush habitat for the benefit of game and nongame wildlife and meet desired range of conditions in most big sagebrush habitats throughout the planning area.	Same as for Alternative C, except that desired range of conditions would apply to all areas in big sagebrush habitats throughout the planning area.	Allow natural processes to determine future big sagebrush conditions.
Management Goal 3—*Manage upland habitats so that the forage, water, cover, structure, and security necessary for wildlife are available on public land.*				
1. Manage habitat conditions which emphasize the requirements of game species in areas where there are opportunities for improvement.	1. Same as for Alternative A.	1. Manage for habitat conditions which equally emphasize the requirements of game and nongame species across the planning area.	1. Manage for habitat conditions which equally emphasize the requirements of game and nongame species in most areas.	1. Allow natural processes to determine outcome of habitat conditions.
2. Emphasize habitat management that highlights the requirements of individual species.	2. Same as for Alternative A.	2. Emphasize habitat management that highlights the requirements of communities of game and nongame species.	2. Same as for Alternative C.	2. Allow natural processes to occur.
3. Improve habitat quality on deer, pronghorn, and elk winter range currently in unsatisfactory condition.	3. Same as for Alternative A.	3. Same as for Alternative A.	3. Same as for Alternative A.	3. Allow natural processes to occur.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
4. Install 10 to 15 wildlife water developments (2,000–3,000-gallon capacity guzzlers) where water is deficient.	4. Same as for Alternative A.	4. Same as for Alternative A.	4. Same as for Alternative A.	4. Maintain existing wildlife water developments crucial to wildlife.
5. Continue Cabin Lake Mule Deer Winter Range Cooperative Road Closure with USFS and ODFW and initiate new ones where necessary.	5. Same as for Alternative A.	5. Expand Cabin Lake Mule Deer Winter Range Cooperative Road Closure by 34,374 acres.	5. Expand Cabin Lake Mule Deer Winter Range Cooperative Road Closure by 34,374 acres.	5. Same as for Alternative A.
Management Goal 4—*Manage forage production to support wildlife population levels identified by the Oregon Department of Fish and Wildlife (ODFW).*				
1. Continue current allocation of 13,691 animal unit months (AUM's) for wildlife.	1. Allocate 8,390 additional AUM's of forage to wildlife to provide for expanding elk and bighorn sheep population to reflect ODFW management numbers.	1. Same as for Alternative B.	1. Same as for Alternative B.	1. No allocation would be necessary.
2. Livestock grazing use within crucial deer or pronghorn winter range would not be allowed to exceed an average of 30% removal of the current years growth of bitterbrush.	2. Livestock grazing use within crucial deer or pronghorn winter range would not be allowed to exceed an average of 30% removal of the current years growth of browse.	2. Same as for Alternative B.	2. Same as for Alternative B.	2. No special management adjustments would be required.

SPECIAL STATUS ANIMAL SPECIES

Management Goal—*Manage public land to maintain, restore, or enhance populations and habitats of special status animal species. Priority for the application of management actions would be: (1) Federal endangered species, (2) Federal threatened species, (3) Federal proposed species, (4) Federal candidate species, (5) State listed species, (6) BLM sensitive species, (7) BLM assessment species, and (8) BLM tracking species. Manage in order to conserve or lead to the recovery of threatened or endangered (T&E) species.*				
1. Maintain, restore, or enhance special status species habitat with equal emphasis given to game and nongame species.	1. Maintain, restore, or enhance special status species habitat with emphasis given to game species.	1. Same as for Alternative A.	1. Same as for Alternative A.	1. Allow natural processes to occur.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
2. Emphasize management that is driven by the requirements of individual species (single-species management).	2. Same as for Alternative A.	2. Emphasize management that fosters plant/animal community health integrity and landscape-level issue resolution rather than emphasizing the requirements of individual species.	2. Same as for Alternative C.	2. No special management objectives needed.
3. Actively participate in the preparation and implementation of recovery plans/habitat management plans and conservation plans for listed and proposed species as required by law.	3. Same as for Alternative A.	3. Same as for Alternative A.	3. Same as for Alternative A.	3. No special management required.
LIVESTOCK GRAZING MANAGEMENT				
Management Goal—*Provide for a sustainable level of livestock grazing consistent with other resource objectives and public land-use allocations.*				
1. Continue the authorization of 108,234 AUM's for livestock grazing use.	1. Provide for sustained yield of 119,057 AUM's of livestock forage with emphasis on livestock production.	1. Provide for a sustained yield of 86,587 AUM's of livestock forage, while emphasizing resource values, consistent with resource objectives.	1. Provide for a sustained yield of 108,234 AUM's of forage for livestock grazing, while maintaining resource values for multiple use and sustainability.	1. Do not authorize grazing use.
2. Adjust interim and long-term stocking levels in accordance with the results of monitoring studies, allotment evaluations, and rangeland health assessments. Implement rangeland projects to minimize grazing impacts.	2. Emphasize rangeland projects as the preferred solution to meet resource management objectives. Plan and implement structural rangeland projects (primarily water developments and fencing) to access available forage and to mitigate livestock grazing impacts to other resources. Abandon and rehabilitate projects that do not meet management objectives.	2. Emphasize administrative solutions (season of use revisions and stock level adjustments; pasture exclusions) as the preferred solution to meet resource management objectives. Plan and implement rangeland projects only to meet resource objectives. Abandon and rehabilitate projects that do not enhance resource values and meet management objectives.	2. Same as for Alternative C.	2. Do not plan or implement rangeland projects in support of livestock grazing. Abandon and rehabilitate all rangeland projects that support livestock grazing that do not contribute to meeting other management objectives.
3. Authorize temporary nonrenewable grazing use of	3. Authorize temporary nonrenewable grazing use of	3. Do not authorize temporary nonrenewable grazing use.	3. Authorize temporary nonrenewable grazing use. Retain	3. Do not authorize temporary nonrenewable grazing use.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
additional forage production consistent with existing management framework plan and rangeland program summary management objectives.	additional production in years of favorable growing conditions, consistent with meeting resource objectives		additional herbaceous production on site for values other than forage production.	
WILD HORSES				
Management Goal—***Maintain and manage wild horse herds in established herd management areas at appropriate management levels to ensure a thriving natural ecological balance between wild horse populations, wildlife, livestock, vegetation resources, and other resource values.***				
1. Manage wild horses in the Paisley Desert and Beaty Butte Herd Management Areas within the current boundaries.	1. Manage wild horses in the Beaty Butte Herd Management Area within the existing boundaries. Modify the boundaries of the Paisley Desert Herd Management Area, reducing the herd management area by 31,859 acres—these acres would be retained as an unoccupied herd area.	1. Same as for Alternative B.	1. Same as for Alternative B.	1. Same as for Alternative A.
2. Implement, and revise where needed, existing herd management area plans.	2. Same as for Alternative A.	2. Same as for Alternative A.	2. Same as for Alternative A.	2. Same as for Alternative A.
3. Manage for an appropriate management level range of 60–110 horses in the Paisley Desert Herd Management Area, and 100–250 in the Beaty Butte Herd Management Area.	3. Manage wild horses within an established appropriate management level range, as in Alternative A. Periodically evaluate appropriate management levels for each herd management area based on monitoring data. If data indicates a need to adjust grazing use, livestock would be considered a higher value for forage allocation.	3. Manage wild horses within an established appropriate management level range. The initial appropriate management level range would be the same as Alternative A. Periodically evaluate appropriate management levels for each herd management area based on monitoring data. Adjust wild horse and livestock numbers if needed based on each species' contribution toward the ecological balance.	3. Same as for Alternative C, except the initial appropriate management level range would be 60–150 horses in the Paisley Desert Herd Management Area.	3. Establish initial appropriate management level range the same as Alternative D. Periodically evaluate appropriate management levels for each herd management area based on monitoring data. If data indicates a need to adjust grazing use, wild horse appropriate management levels would be adjusted to ensure that wild horse populations are at a level to achieve and maintain a thriving ecological balance.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
4. Allocate forage for the maximum number of adult wild horses based on an approximate average of 80% adults and 20% foals. A total of 1,020 AUM's would be allocated for Paisley Desert and 2,400 AUM's in Beaty Butte.	4. The initial forage allocation for wild horses would be for the total number of horses in each herd management area regardless of age: 1,320 AUM's would be allocated in Paisley Desert and 3,000 in Beaty Butte.	4. Forage allocations would be the same as Alternative B. If appropriate management levels are adjusted, allocate forage at the maximum of the appropriate management level range.	4. Forage allocations would be 1,800 AUM's in Paisley Desert and 3,000 in Beaty Butte.	4. Allocate forage initially for horses the same as for Alternative C. Forage allocations would be adjusted based on monitoring data.
5. Restore poor condition, unhealthy rangelands in the Paisley Desert Herd Management Area whenever it becomes a priority.	5. Restore portions of the Paisley Desert Herd Management Area to plant communities that are healthy, promote plant community diversity, and allow the plant communities to be more resilient to disturbance and invasive species over the long term. Restoration would aid in keeping horses inside the herd management area.	5. Same as for Alternative B.	5. Same as for Alternative B.	5. No restoration would be done. Plant communities would maintain the present unhealthy state or deteriorate naturally. Wild horses would need to find forage needs elsewhere in the herd management area or stray outside the herd management area.
6. Maintain established water developments used by horses. New water developments, fencing, and other projects as identified in existing land use plans, would be constructed if needed.	6. Maintain established water developments used by horses and construct new ones. Fencing and other structures would be maintained and new ones developed. Boundary fencing would be improved to keep horses in the herd management areas.	6. Maintain established water developments and other projects supporting wild horse populations, as consistent with other management objectives.	6. Maintain established water developments and other projects supporting wild horse populations, as consistent with other management objectives. Abandoned project sites would be rehabilitated.	6. Maintain fencing on the exterior of the herd management areas. Remove interior fencing. Maintain established water developments and construct new ones as needed for survival of the horses.

SPECIAL MANAGEMENT AREAS

Areas of Critical Environmental Concern

Management Goal—*Retain existing and designate new areas of critical environmental concern (ACEC's) and research natural areas (RNA's) where relevance and importance criteria are met and special management is required to protect the identified values.*

1. Manage existing ACEC and RNA designations on four areas totaling 167,565 acres. Manage the areas according to existing	1. Same as for Alternative A, except exclude Department of Defense (DOD) withdrawal land from the Fossil Lake ACEC.	1. Same as for Alternative A, except add 18,019 acres to the existing Lake Abert ACEC and manage the area according to the	1. Same as for Alternative C.	1. Remove ACEC/RNA designation from all existing designated areas. Manage according to how adjacent land is

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
plans.		existing ACEC management plan		managed.
2. Designate no new ACEC's.	2. Designate 3,599 acres in Connley Hills as an ACEC/RNA.	2. Designate 12 areas totaling 129,130 acres as ACEC's (10 of which would also be RNA's.)	2. Designate 12 areas totaling 123,656 acres as ACEC's (10 of which would also be RNA's.)	2. Same as for Alternative A.

Wilderness Study Areas *(land adjacent to and within WSA's)*

Management Goal—*BLM-administered land acquired since the wilderness inventory and determined to have wilderness values would be included in adjacent wilderness study areas (WSA's). WSA's and WSA additions would be managed under the 1995 "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP).*

Acquired lands which are adjacent to or within existing WSA's would be evaluated for wilderness characteristics. If such lands meet wilderness characteristics, they would be included as part of adjacent WSA's and be managed under wilderness IMP to protect their values.	Acquired lands within or adjacent to existing WSA's would not be added to those WSA's.	Designate an additional 1,194 acres as part of the existing WSA in the Abert Rim, Fish Creek Rim, and Guano Creek WSA's.	Same as for Alternative C.	Same as for Alternative C.

Wild and Scenic Rivers

Management Goal—*Protect and enhance outstandingly remarkable values of rivers determined to be administratively suitable for potential inclusion in the national wild and scenic river system until Congress acts.*

No eligible rivers are recommended administratively suitable for potential designation by Congress as WSR's.	Recommend that no eligible rivers are administratively suitable for potential designation by Congress as WSR's.	Recommend approximately 22.8 miles of Honey Creek (5.6 miles), Twelvemile Creek (6.6 miles), and Guano Creek (10.6 miles) as administratively suitable for potential designation by Congress as WSR's.	Recommend approximately 6.6 miles on Twelvemile Creek administratively suitable for potential designation by Congress as WSR's.	Recommend no eligible rivers administratively suitable for potential designation by Congress as WSR's.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
CULTURAL AND PALEONTOLOGICAL RESOURCES				
Management Goal 1—*Preserve and protect cultural resources in accordance with existing laws, regulations, and Executive orders, in consultation with Native Americans.*				
Implement regular patrols to monitor and protect sites. Develop a monitoring plan and baseline condition information. Maintain structures and buildings at Shirk Ranch.	Same as for Alternative A, except restore Shirk Ranch structures and buildings.	Same as for Alternative B.	Same as for Alternative C, except stabilize buildings and structures at Shirk Ranch.	Allow natural processes to occur within the limits of existing laws, regulations, and Executive orders.
Management Goal 2—*Increase the public's knowledge of, appreciation for, and sensitivity to cultural resources, Native American issues, and paleontological resources.*				
Continue present cost-share programs with universities. Consult with Native American Tribes on all actions which may impact their use of cultural resources.	Develop on- and off-site interpretation of sites and resources which have educational and recreation potential.	Develop on-site interpretation only if it would not impact the condition of the site or improve the condition of the site. Develop all interpretation in consultation with Native Americans.	Same as for Alternative C.	Do no on site interpretation of sites and allow natural processes to continue.
Management Goal 3—*In consultation with local Native American Tribes, take actions, including designating areas of critical environmental concern (ACEC's), to protect traditional religious sites, landforms, burial sites, resources, and other areas of interest. Nominate as traditional cultural properties those areas that qualify.*				
Limit land-disturbing activities within identified Native American religious sites or traditional cultural properties. Manage religious sites and traditional cultural properties for continued use by Native Americans and retain these areas in Federal ownership.	Consider Native American requests to practice traditional activities on public lands, and allow for such uses where practical. Designate one ACEC to protect high value cultural resources and sites.	Same as for Alternative A, with enlargement of protected areas at traditional cultural properties and the Fossil Lake Closure Area. Designate 8 ACEC's to protect high value cultural resources and sites.	Same as for Alternative A. Designate 8 ACEC's to protect high value cultural resources and sites.	Allow natural processes to occur on sites and allow uses only if required by laws, regulations, and Executive orders.

Alternative A— Continue present management	Alternative B— Emphasize commodity production and public uses	Alternative C— Emphasize protection of natural values	Alternative D— Protect and improve natural values while providing commodity production	Alternative E— Exclude commodity production and limit other uses, maximize natural processes
Management Goal 4—*In order to fulfill trust responsibilities with Tribal Peoples, manage public land to maintain, restore, or enhance plant community health and cultural plants. Identify traditional ecological knowledge with humans as part of the ecosystem and maintain habitat integrity with sustainable yields at a landscape level.*				
1. Ensure that management actions on the land do not contribute to the decline of cultural plants.	1. Same as for Alternative A.	1. Manage for desired range of conditions by using a mix of protection, restoration, and enhancement measures for cultural plants. Encourage Tribal input for management needs and direction.	1. Same as for Alternative C.	1. Allow natural processes to operate.
2. On an as-needs basis, survey for cultural properties related to western juniper woodlands.	2. Same as for Alternative A.	2. Manage western juniper woodlands for cultural and religious property concerns with aid of Tribal Peoples.	2. Manage western juniper woodlands for Tribal Peoples and for commodity needs.	2. Allow natural processes to operate and prevent wood cutting or bough collecting for commercial purposes.
HUMAN USES AND VALUES				
Management Goal—*Manage public lands to provide social and economic benefits to local residents, businesses, visitors, and future generations.*				
1. Make contracts for services and sale of products available to local firms as need and conditions permit.	1. Target contracts for services and sale of products from Federal lands to local firms and individuals as permitted by existing authorities and where it would help achieve management objectives.	1. Same as for Alternative B.	1. Same as for Alternative B.	1. Allow no commodity production from public land.
2. Manage natural resource amenities as outlined in existing land use plans. Maintain existing recreation developments and other areas of public use and interest.	2. Manage natural resource amenities on public lands to enhance local communities as places to live, work, or visit.	2. Same as for Alternative B.	2. Same as for Alternative B.	2. Continue to use developed recreation sites. Manage activities on public land to provide for public health and safety. Allow natural processes to operate.
3. Protect existing special areas such as ACEC's for the enjoyment of future generations.	3. Protect five ACEC's identified in Table 3-3 and other specifically identified or designated special areas.	3. Protect 16 ACEC's identified in Table 3-3 and other specifically identified or designated special areas for enjoyment of future generations.	3. Same as for Alternative C.	3. Eliminate all SMA's except for WSA's.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
AIR QUALITY				
Management Goal—*Meet the national ambient air quality standards as described in the "Clean Air Act" (CAA) and follow the direction and requirements of the Southcentral Oregon Fire Management Partnership.*				
Prescribe burn an average of 5,000 to 20,000 acres per year while meeting air quality and smoke management standards.	Using prescribe fire, burn up to 64,000 acres per year while meeting air quality and smoke management standards.	Using prescribe fire and wildland fire use, burn up to 64,000 acres per year while meeting air quality and smoke management standards.	Same as for Alternative C, except acre limit would be 480,000 per year.	Allow wildland fire processes (and resultant smoke emissions) to operate in the ecosystem.
FIRE MANAGEMENT				
Management Goal 1—*Provide an appropriate management response on all wildland fires with emphasis on firefighter and public safety. When assigning priorities, decisions will be based on relative values to be protected commensurate with fire management costs.*				
Provide an appropriate management response emphasizing initial attack, full suppression on all wildland fire outside the Fort Rock Fire Management Area, ensuring that objectives of the LRA fire management plan are met.	Provide an appropriate management response emphasizing initial attack, full suppression on all wildland fires threatening commodity areas, and to protect human life, and other Federal, state, or private property.	Provide an appropriate management response considering safety, environmental, social, economic, political, and resource management objectives. Provide initial attack full suppression to protect human life, and other Federal, state, or private property.	Same as for Alternative C.	Provide an appropriate management response emphasizing initial attack, full suppression only to protect human life, and other Federal, state, or private property.
Management Goal 2—*Rehabilitate burned areas to mitigate the adverse effects of wildland fire on soil and vegetation in a cost-effective manner and to minimize the possibility of wildland fire recurrence or invasion of weeds.*				
Emergency fire rehabilitation activities are implemented on a case-by-case basis following wildland fire.	Emergency fire rehabilitation activities would be implemented following wildland fire according to direction for emergency fire rehabilitation projects found in Appendix L2.	Same as for Alternative B.	Same as for Alternative B.	Do not implement emergency fire rehabilitation projects.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
Management Goal 3— ***Restore and maintain ecosystems consistent with land uses and historic fire regimes through wildland fire use and prescribed fire. Reduce areas of high fuel loading resulting from years of fire suppression that may contribute to extreme fire behavior.***				
1. No areas are designated for wildland fire use. The Fort Rock Fire Management Area is managed in a similar way.	1. No areas are designated for wildland fire use.	1. Designate areas to be further analyzed for wildland fire use.	1. Same as for Alternative C, except areas designated for wildland fire use would be less.	1. All areas are designated to allow wildland fires to burn unchecked, except where it would jeopardize human life, and other Federal, state, or private property.
2. Use prescribed fire on a case-by-case basis to achieve resource objectives.	2. Emphasize use of prescribed fire and mechanical hazardous fuels reduction to optimize the forage base and commodity production.	2. Emphasize use of prescribed fire and mechanical hazardous fuels reduction to restore degraded habitats and to maintain natural landscapes and processes.	2. Use prescribed fire and mechanical hazardous fuels reductions as appropriate to achieve resource objectives.	2. Do not use prescribed fire.
3. An average of 0.3 to 0.6% (10,000 to 20,000 acres) of the LRA is burned annually in prescribed fires.	3. No more than 2% (64,000 acres) of the LRA would be burned annually by prescribed fire. Less than 19% (320,000 acres) would be burned in a 10-year period.	3. No more than 2% (64,000 acres) of the LRA would be burned annually by prescribed fire and wildland fire use. No more than 50% (1,600,000 acres) would be burned in a 10-year period.	3. No more than 15% (480,000) of the LRA would be burned annually by prescribed fire and wildland fire use. Less than 35% (1,120,000 acres) would be burned in a 10-year period.	3. Do not use prescribed fire or wildland fire use.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
RECREATION				
Management Goal—*Provide and enhance developed and undeveloped recreation opportunities, while protecting resources, to manage the increasing demand for resource-dependent recreation activities.*				
1. Continue management of existing Warner Wetlands Special Recreation Management Area. Manage remaining public land as extensive recreation management area.	1. Manage Warner Wetlands Special Recreation Management Area and designate North Lake Special Recreation Management Area to enhance tourism and recreation opportunities. Manage remaining public land as extensive recreation management area.	1. Manage existing Warner Wetlands Special Recreation Management Area and designate North Lake County Special Recreation Management Area with emphasis on undeveloped, dispersed recreation opportunities and protection of natural values, while providing an associated level of support facilities. Manage remaining public land as extensive recreation management area.	1. Manage Warner Wetlands Special Recreation Management Area and designate North Lake County Special Recreation Management Area to provide quality recreation opportunities while protecting resource values. Manage remaining public land as extensive recreation management area.	1. Provide minimal recreation management. No special recreation management areas's would exist. All public land would be treated as extensive recreation management area.
2. Continue management of existing developed and undeveloped recreation sites and consider their expansion. Develop potential recreation sites to meet high public demand or to provide for public safety or resource protection. Develop tourism opportunities.	2. Increase tourism opportunities by expanding management of existing developed and undeveloped recreation sites (including trails, wildlife viewing areas, back country byways, interpretive areas, and campgrounds). Develop all identified potential sites and other sites, as appropriate, where visitation commonly occurs.	2. Emphasize undeveloped types of recreation while assuring protection of natural and cultural values. Allow for development to protect and interpret natural and cultural values and provide for public safety. Rehabilitate or close sites where resource values are being jeopardized beyond acceptable levels.	2. Continue management of existing recreation sites, areas, and their associated improvements, and allow for their expansion. Establish new recreation sites and areas to meet increased recreation demand where needed to protect natural and cultural values and provide for public safety. Develop tourism opportunities consistent with other resource objectives.	2. Same as for Alternative C.
3. Continue providing information (i.e., maps and brochures, etc.) and education opportunities to enhance visitors' experience.	3. Provide information and education opportunities to enhance visitors' experiences and increase their knowledge of public lands.	3. Same as for Alternative B.	3. Same as for Alternative B.	3. Provide no information or education opportunities.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
4. Authorize special recreation permits on a case-by-case basis while providing for protection of sensitive resource values.	4. Emphasize commercial and competitive use opportunities and activities through issuance of special recreation permits.	4. Limit the issuance of special recreation permits; emphasize and promote protection of cultural and natural resource values. Implement group size limits in North Lake County Special Recreation Management Area and some ACEC's.	4. Authorize special recreation permits as needed to meet the demand, while protecting cultural and natural resource values and public safety. Implement group size limits in North Lake County Special Recreation Management Area and some ACEC's.	4. Do not issue special recreation permits.
5. Continue existing management of Sunstone Collection Area for recreational collecting.	5. Open the Sunstone Collection Area to commercial use. Encourage commercial use through the issuance of special recreation permits.	5. Same as for Alternative A.	5. Same as for Alternative A.	5. Allow surface collection only within the Sunstone Collection Area.
6. Limit total number of user days for wilderness therapy schools to 16,600 for entire LRA. Group size would be limited to nine students, plus staff.	6. Limit total number of user days for wilderness therapy schools to 16,400 for entire LRA: 8,300 in North Lake Special Recreation Management Area, and 8,100 for remainder of LRA. Group size would be limited to 12 students, plus staff.	6. Limit total number of user days for wilderness therapy schools to 10,200 for entire LRA: 4,800 in North Lake Special Recreation Management Area, and 5,400 for remainder of LRA. Group size would be limited to nine students, plus staff. No wilderness therapy schools would be authorized to operate in the North Lake Special Recreation Management Area between December 1 and March 31, annually.	6. Limit total number of user days for wilderness therapy schools to 12,800 for entire LRA: 7,400 in North Lake Special Recreation Management Area, and 5,400 for remainder of LRA. Group size would be limited to nine students, plus staff.	6. All existing special recreation permits authorizing wilderness therapy school operations would be revoked and no new special recreation permits issued.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
OFF-HIGHWAY VEHICLES				
Management Goal—***Manage off-highway vehicle (OHV) use to protect resource values, promote public safety, provide OHV use opportunities where appropriate, and minimize conflicts among various users.***				
1. Manage motorized vehicles in accordance with existing open, limited, and closed OHV use designations: acres open—2,510,908; limited—641,965; and closed—8,543.	1. Manage motorized vehicles in accordance with the following OHV use designations: acres open—2,507,474; limited—645,400; and closed—8,543.	1. Manage motorized vehicles in accordance with the following OHV use designations: acres open—0; limited—3,120,909; and closed—40,507.	1. Manage motorized vehicles in accordance with the following OHV use designations: acres open—2,038,044; limited—1,112,110; and closed—11,262.	1. Manage motorized vehicle use under limited and closed OHV use designations, maximizing natural system functions.
2. Allow for OHV organized events when consistent with protection of resource values.	2. Maximize opportunities for OHV organized events.	2. Allow organized OHV events only on existing and/or designated roads and trails.	2. Same as for Alternative C.	2. Do not provide for organized OHV events.
3. In WSA's, all OHV's would be limited to existing ways and trails, except for the Sand Dunes, which would be open.	3. Same as for Alternative A.	3. In WSA's, all motorized and mechanical vehicles would be limited to designated ways and trails, except for the Sand Dunes, which would be closed.	3. Same as for Alternative A, except the Devils Garden, Abert Rim, Guano Creek, Hawk Mountain, and Sage Hen Hills WSA's would be limited to designated roads and trails.	3. Same as for Alternative A, except for the Sand Dunes, which would be closed.
4. Designation of scenic byways and vehicle tour routes, etc., would be considered if they are consistent with existing OHV designations, and resource concerns are addressed on a project-specific basis.	4. Same as for Alternative A.	4. Same as for Alternative A.	4. Same as for Alternative A.	4. Same as for Alternative A.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
VISUAL RESOURCES				
Management Goal—*Manage public land actions and activities consistent with visual resource management (VRM) class objectives.*				
1. Manage all WSA's as VRM Class I. Areas released from study would be managed as the class they were originally inventoried, unless released areas are located within another SMA (i.e., ACEC/RNA, etc.).	1. Same as for Alternative A.	1. Same as for Alternative A.	1. Same as for Alternative A.	1. Same as for Alternative A.
2. Manage visual resource classes within eligible WSR's according to existing plans as amended.	2. Manage eligible or suitable WSR's as VRM Class II, unless managed as Class I under other resource prescriptions (such as WSA's or ACEC/RNA's, etc.).	2. Same as for Alternative B.	2. Manage all eligible WSR's classified as wild or scenic as VRM Class II, unless managed as Class I under other resource prescriptions (such as WSA's or ACEC/RNA's, etc.).	2. No VRM classes would be assigned.
3. Manage VRM classes within ACEC's as prescribed in existing plans, as amended.	3. Manage ACEC's according to VRM prescriptions proposed under this alternative.	3. Manage ACEC's according to VRM prescriptions proposed under this alternative.	3. Manage ACEC's according to VRM prescriptions proposed under this alternative.	3. ACEC's would not be designated. Manage visual resources to allow natural processes to determine visual quality. Existing VRM classes would be removed.
4. Maintain existing management framework plan VRM classifications in all other areas.	4. Manage all other visual resources as determined in the management framework plan or as reinventoried.	4. Same as for Alternative B.	4. Same as for Alternative B.	4. Manage all other visual resources to allow natural processes to determine visual quality. Existing VRM classes would be removed.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
ENERGY AND MINERAL RESOURCES				
Management Goal 1—*Provide opportunity for the exploration, location, development, and production of locatable minerals in an environmentally-sound manner. Eliminate and rehabilitate abandoned mine hazards.*				
Continue administration of locatable minerals as required by law and regulation.	Keep the resource area open to locatable mineral entry except for those areas listed in Table 3-7. Revoke the mineral segregation on the Public Sunstone Area. Revoke public water reserve withdrawals. Retain public land or minerals where there is moderate or high potential, unless equal values are obtained.	Keep the resource area open to locatable mineral activity except for those areas listed on Table 3-7 as closed to mineral entry. Retain the Public Sunstone Area. Withdraw from the operation of the mining laws the Red Knoll ACEC and greater sage-grouse habitat.	Same as for Alternative C, except 21,064 acres would be closed to mineral entry. Withdraw from the operation of the mining laws a portion of the Red Knoll ACEC (4,600 acres).	Actions would be taken to withdraw the entire resource area from locatable mineral entry.
Management Goal 2—*Provide leasing opportunity for oil and gas, geothermal energy, and solid minerals in an environmentally-sound manner.*				
Continue to issue exploration permits and leases in areas currently open to mineral leasing, 1,373,123 acres.	Keep 1,376,596 acres open to mineral leasing. Keep 620,006 areas open with no surface occupancy. Remove the lake-level and total dissolved solids stipulations on leasing in Lake Abert. Allow leasing of lands eliminated from wilderness consideration (WSA's).	Allow leasing of lands eliminated from wilderness consideration within multiple use constraints to protect resource values. Open 2,369,434 acres to leasing with no surface occupancy.	Keep 1,305,124 acres open to mineral leasing except for those areas shown as closed to leasing in Table 3-7. Allow leasing of lands eliminated from wilderness consideration (WSA's). Open 776,436 acres to leasing with no surface occupancy.	Close the entire area to energy and mineral leasing.

Alternative A— Continue present management	Alternative B— Emphasize commodity production and public uses	Alternative C— Emphasize protection of natural values	Alternative D— Protect and improve natural values while providing commodity production	Alternative E— Exclude commodity production and limit other uses, maximize natural processes
Management Goal 3—*In an environmentally-sound manner, meet the demands of local, state, and Federal agencies, and the public, for mineral material from public lands.*				
Continue to make mineral material disposals from existing pits and quarries, and from potential sources currently open to mineral material disposal.	Identify mineral material sources that would meet the demand for public projects and mineral material sale to private parties. Allow mineral material disposal from lands eliminated from wilderness consideration (WSA's).	Keep the resource area open to mineral material disposal except for those areas identified in Table 3-7. Allow mineral material disposal in other areas on a case-by-case basis with priority consideration given to protecting sensitive resources.	Keep the resource area open to mineral material disposal except the areas identified in Table 3-7. Allow mineral material disposal from existing and future sources. Allow mineral material disposal from lands eliminated from wilderness consideration (WSA's).	Close the entire area to mineral material disposal, except where essential for critical road construction and emergencies.
LANDS AND REALTY				
Management Goal 1—*Retain public land with high public resource values. Consolidate public land inholdings and acquire land or interests in land with high public resource values to ensure effective administration and improve resource management. Acquired land would be managed for the purpose for which it was acquired. Make available for disposal public land within Zone 3 by State indemnity selection, private or state exchange, "Recreation and Public Purpose Act" lease or sale, public sale, or other authorized method, as applicable.*				
1. Make land tenure adjustments consistent with existing land use planning with emphasis on acquiring land with high public resource values.	1. Retain or increase public land holdings in Zone 1, with emphasis on acquiring land that would facilitate commodity production. Under certain circumstances, disposal of small parcels of public land would be permitted in Zone 1.	1. Retain or increase public land holdings in Zone 1, with emphasis on acquiring land with high public resource values. Under certain circumstances, disposal of small parcels of public land would be permitted in Zone 1.	1. Same as for Alternative C.	1. Retain public land holdings in Zone 1.
2. Make land tenure adjustments consistent with existing land use planning with emphasis on acquiring land with high public resource values.	2. Maintain or increase public land holdings in Zone 2, with special emphasis on land exchanges that benefit commodity production. Under certain circumstances, disposal of public land would be permitted in Zone 2.	2. Maintain or increase public land holdings in Zone 2, with special emphasis on acquiring land with high public resource values. Under certain circumstances, disposal of public land would be permitted in Zone 2.	2. Same as for Alternative C.	2. Retain public land holdings in Zone 2.

Alternative A— Continue present management	**Alternative B**— Emphasize commodity production and public uses	**Alternative C**— Emphasize protection of natural values	**Alternative D**— Protect and improve natural values while providing commodity production	**Alternative E**— Exclude commodity production and limit other uses, maximize natural processes
3. Make available for disposal approximately 41,500 acres of public land in Zone 3 as specifically identified in existing land use planning, Map L-1, and as described in Appendix O2.	3. Make available for disposal approximately 54,500 acres of public land in Zone 3 as specifically identified on Map L-3, and as described in Appendix O2. Approximately 400 acres are identified for disposal by direct sale to Lake County and the Native American Tribes.	3. Make available for disposal approximately 7,500 acres of public land in Zone 3 as specifically identified on Map L-4, and as described in Appendix O2. Approximately 400 acres are identified for disposal by direct sale to Lake County and the Native American Tribes.	3. Same as for Alternative C (Map L-5).	3. Public land would be considered for disposal on a case-by-case basis only.
Management Goal 2—***Meet public needs for land use authorizations such as rights-of-way, leases, and permits.***				
1. Continue corridor designation as necessary, consistent with existing land use planning.	1. Encourage all applicants for electrical transmission lines greater than 69 kV, all mainline fiber optics facilities, and pipelines greater than 10 inches in diameter to locate their facilities within designated corridors.	1. All linear rights-of-way for electrical transmission lines greater that 69 kV, all mainline fiber optics facilities, and all pipelines greater than 10 inches in diameter would be located within designated corridors.	1. Same as for Alternative B.	1. The entire planning area would be considered a rights-of-way exclusion area.
2. Some WSA's and the Buck Creek Watchable Wildlife Site are considered rights-of-way exclusion areas. The remaining WSA's, Lost Forest RNA, and the Lake Abert ACEC are considered rights-of-way avoidance areas.	2. All WSA's, Lost Forest/Sand Dunes/Fossil LakeACEC/RNA, Lake Abert ACEC, Connley Hills ACEC, the Buck Creek Watchable Wildlife Site, Table Rock and the area surrounding the Black Hills would be considered rights-of-way avoidance areas. There would be no rights-of-way exclusion areas within the planning area.	2. All ACEC's, WSR's, the Buck Creek Watchable Wildlife Site, National Register of Historic Places (NRHP) Districts, and WSA's would be rights-of-way exclusion zones. All greater sage-grouse habitat would be considered a rights-of-way avoidance zone.	2. All ACEC's, WSR's, the Buck Creek Watchable Wildlife Site, and greater sage-grouse breeding habitat would be designated rights-of-way avoidance areas. WSA's and NRHP districts would be considered exclusion areas.	2. The entire planning area would be considered a rights-of-way exclusion area.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
3. Continue corridor designation as necessary, consistent with existing land use planning.	3. Designate all existing trans-district electrical transmission lines identified by the "Western Regional Corridor Study," and some county roads as rights-of-way corridors. Nominal corridor width would be 1,000 feet on each side of centerline of existing facilities.	3. Designate all existing trans-district electrical transmission lines identified by the "Western Regional Corridor Study," and some county roads as rights-of-way corridors. Nominal corridor width would be 500 feet on each side of centerline of existing facilities.	3. Same as for Alternative B.	3. The entire planning area would be considered a rights-of-way exclusion area.
Management Goal 3—*Acquire public and administrative access to public land where it does not currently exist.*				
1. Acquire legal public or administrative access, including conservation and scenic easements, from willing landowners on a case-by-case basis as the need arises. Emphasis would be placed on providing access for BLM administrative facilities and program-related activities.	1. Acquire legal public or administrative access, from willing landowners, where public demand or an administrative need exists. Emphasis would be placed on providing administrative access to public land with high mineral, timber, grazing or recreational value.	1. Acquire legal public or administrative access from willing landowners, where public demand or an administrative need exists.	1. Acquire legal public or administrative access from willing landowners, where public demand or an administrative need exists. Emphasis would be placed on providing access to areas containing high public resource values.	1. New access rights would not be acquired unless prescribed by law.
2. Construct new roads around private lands where easement acquisition is not feasible or desirable.	2. Same as for Alternative A.	2. Construct new roads around private lands where easement acquisition is not feasible or desirable, when it supports the protection of natural values.	2. Same as for Alternative A.	2. No new roads would be constructed unless prescribed by law and for the protection of public health and safety.
Management Goal 4—*Utilize withdrawal actions with the least restrictive measures necessary to accomplish the required purposes.*				
Consider requests for new withdrawals and withdrawal relinquishments or modifications on a case-by-case basis.	Recommend that no new lands be withdrawn from the public land, mining, and mineral leasing laws. Revoke all public water reserve withdrawals.	Recommend the Red Knoll ACEC (11,588 acres) be withdrawn from the public land and mining laws.	Recommend that portion of the Red Knoll ACEC, containing 4,600 acres, be withdrawn from the public land and mining laws.	Withdraw the entire resource area from the public land, mining, and mineral leasing laws.

Alternative A— Continue present management	**Alternative B—** Emphasize commodity production and public uses	**Alternative C—** Emphasize protection of natural values	**Alternative D—** Protect and improve natural values while providing commodity production	**Alternative E—** Exclude commodity production and limit other uses, maximize natural processes
ROADS AND TRANSPORTATION				
Management Goal—***Maintain existing roads on the resource area transportation plan and other roads to provide administrative or public access to public land. Construct new roads using best management practices (BMP's) and appropriate mitigation to provide administrative, permitted, and recreational access as needed. Close roads that are not longer needed or that are causing resource damage.***				
1. Maintain roads based on maintenance priorities and funding. Construct new roads on case-by-case basis.	1. Same as for Alternative A, except construct new roads to facilitate commodity production.	1. Maintain roads to protect and enhance resources. New road construction would meet BMP's in Appendix D.	1. Same as for Alternative C.	1. Roads would be maintained to provide administrative access. New roads would not be constructed unless required by law.
2. Retain roads on the district transportation plan. Consider road closures case-by-case.	2. Close roads that are not needed to facilitate commodity production.	2. Close and rehabilitate roads causing resource damage or that are no longer needed.	2. Same as for Alternative C.	2. Same as for Alternative C.

Plant Communities

Shrub Steppe

Management Goal 1—*Restore, protect, and enhance the diversity and distribution of desirable vegetation communities, including perennial native and desirable introduced plant species. Provide for their continued existence and normal function in nutrient, water, and energy cycles.*

Rationale

With passage of the "Federal Land Policy and Management Act" (FLPMA) and the Public Rangeland Improvement Act (PRIA) of 1978, objectives and priorities for the management of public land vegetation resources were more clearly defined. Guidance contained in 43 CFR 4180 of the regulations directs public land management toward the maintenance or restoration of the physical function and biological health of vegetative ecosystems. "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" were approved by the Secretary of the Interior on August 12, 1977. This objective would maintain and improve the condition and trend in plant communities that provide wildlife habitat, recreation, forage, scientific, scenic, ecological, and water and soil conservation benefits for consumptive and nonconsumptive uses. The long-term goal of vegetation management across the landscape is to maintain or improve rangeland condition to desired range of conditions which meet management objectives, not specifically late-potential natural communities ecological status.

Management actions authorized or implemented by BLM would influence future vegetation composition. These actions may include season, intensity, and duration of livestock grazing within diverse vegetation communities; the influence of fire and associated suppression actions; emergency fire rehabilitation and the reintroduction of grazing following fire; the use of natural and management-created firebreaks to protect early-seral communities from frequent fire intervals; rehabilitation and reclamation actions following soil-disturbing activities; management of noxious weeds; off-highway vehicle (OHV) use; wild horse management; recreational use; and mining.

Vegetation management has been based on existing inventories delineating the ecological status of vegetation communities. The basis for defining ecological status and potential is site descriptions that provide a summary of expected species composition and variability with vegetation communities, as well as anticipated responses with management. The delineation of ecological sites is based on soils and climate conditions. In most of the resource area, the ecological site inventory has been completed which also helps provide information for these decisions. Management objectives within existing land use plans to attain late-potential natural community seral communities were based on the increased productivity of late-potential natural community seral communities relative to low-seral communities, their greater ability to stabilize watersheds, and their improved role in water, nutrient, and energy cycling. Vegetation communities in late-potential natural community seral stages express a mosaic of species composition and structure consistent with site potential and, as such, reflect a range of possible plant communities that should meet the objectives defining desired range of conditions within this land use plan.

Monitoring

Over the life of this plan, vegetation communities would be monitored to determine progress toward attaining desired range of conditions. Monitoring to determine success in meeting vegetation management objectives would include periodic measurements of plant composition, vigor, and productivity, as well as measurement of the amount and distribution of plant cover and litter which protects the soil surface from raindrop impact, detains overland flow, protects the surface from wind erosion, and retards soils moisture loss through evaporation. Additional data to determine the effectiveness of established tools in meeting objectives may include herbaceous or woody utilization, actual use, and climatic conditions. Recent research by Ponzetti (2000) and USDI-BLM and U.S. Geological Survey (USGS) (2001) shows that microbiotic crusts may be indicators (e.g., an early warning system) of rangeland health. Initial monitoring has begun by ecological site inventory crews measuring percent cover of biotic crusts in the northern part of the resource area. Additional research in the Northern Great Basin is needed to determine ecological roles, response to natural and human actions, and management/monitoring techniques for biological soil crusts.

Management Direction by Alternative

Alternative A

Upland shrub steppe communities would be managed to improve ecological status of those pastures currently

in early- to mid-seral stage that are not meeting specific management objectives. Within those pastures in late-seral stage to potential natural community, management would be implemented to maintain them. Prescribed fire would continue to be the preferred method to control the dominance of woody species such as invasive western juniper and decadent bitterbrush. Emphasis would be placed on providing for uses which are consistent with meeting ecological objectives including increasing forage production through the development and implementation of economically feasible grazing systems and rangeland improvements. Nonnative seedings would be managed to improve or maintain their vegetation composition to ensure continued forage production and support vegetation community diversity. Identified vegetation communities that provide deer and pronghorn winter range would be managed to supply necessary cover, forage, and browse.

Management actions, consistent with existing land use plans, would be implemented to rehabilitate and/or vegetate plant communities in early- to mid-seral stages only where such communities do not meet specific management objectives. Vegetation manipulation projects would be implemented primarily to enhance forage production, and protect soil, water, and vegetation resources. The future composition of vegetation communities would be the result of continued aggressive suppression response to wildland fires. Following wildland fire, priority would be placed on the rehabilitation of vegetation communities to protect soil, water, and vegetation resources, and to prevent unacceptable on-site or off-site damage. Following fire, rehabilitated areas would be closed to grazing at least two growing seasons. Exceptions may be justified on a case-by-case basis.

Seedings would be implemented with appropriate mixes of adapted perennial and annual plant species. Species mixes would be determined on a site-specific basis dependent on the probability of successful establishment and risks associated with seeding failure.

Alternative B

Upland native shrub steppe communities would be managed to attain a trend toward desired range of conditions based on site potential. Management actions would maintain the condition of those native communities where vegetation composition and structure is consistent with desired conditions. Nonnative seedings in poor or fair condition would be managed to restore production and vigor, while those seedings in good to excellent condition would be managed to maintain their vegetation composition to ensure continued forage production. Forage production and other commodity values of native and nonnative vegetation resources would be optimized to minimize competition with herbaceous species. Upland shrub cover would be maintained at minimum to moderate levels of desired conditions in selected native vegetation communities and in nonnative seedings. The frequency, distribution, and ecological integrity of native stands of mountain shrubs would be restored and maintained.

Management actions would be implemented to rehabilitate and/or establish desirable vegetation communities in areas held in a condition that does not meet desired conditions due to dominance by annual, weedy, or woody species. Vegetation would be manipulated to direct trend toward desired conditions, enhance commodity production, and protect soil, water, and vegetation resources. Emphasis would be placed on the use of prescribed fire and wildland fire use to reduce woody species dominance, optimize forage production, and direct vegetation composition toward desired conditions. Prescribed fire prescriptions would include consideration of short-term impacts to grazing management as well as long-term benefits of increased herbaceous production. Following wildland fire, priority would be placed on the rehabilitation of rangeland vegetation communities held at risk due to dominance by annual and woody species.

Species mixes would be determined on a site-specific basis dependent on the probability of successful establishment and risks associated with seeding failure. The selection of appropriate species would include the use of forage-producing species, and nonnative and native perennial species that support livestock production and other commodity values, as well as the function of upland vegetation communities. Treatment configuration of prescribed burns would emphasize commodity production (as consistent with other resource management objectives) as opposed to mosaics that benefit wildlife.

Areas burned by wildland fire, including those subsequently rehabilitated, would be deferred from grazing use through at least two growing seasons following fire or until monitoring data or professional judgment indicate that health and vigor of desired vegetation has recovered to levels adequate to support and protect upland function. Healthy nonnative perennial communities or communities dominated by annuals may be grazed prior to two growing seasons only if consistent with management objectives.

Alternative C

Upland native shrub steppe communities would be managed to attain trends toward a variety of desired range of conditions based on management objectives and site potential. Management actions would maintain the condition of those native communities where vegetation composition and structure are consistent with desired conditions and natural values. Upland shrub cover across the landscape would be maintained at moderate levels of potential for wildlife cover values and structural diversity in selected native vegetation communities. The frequency, distribution, and ecological integrity of native stands of mountain shrubs would be restored and maintained where site potential would support these species. Nonnative seedings would be evaluated in terms of wildlife connectivity, total ecological diversity, and other factors to meet desired range of conditions.

Management actions would be implemented to rehabilitate and/or vegetate plant communities that do not meet desired range of conditions due to dominance by annual, weedy, introduced, or woody species such as invasive western juniper and decadent bitterbrush. Vegetation manipulation projects would be implemented primarily to direct trend toward desired conditions, improve structural and species diversity, and microbiotic crusts, and protect soil, water, and vegetation resources.

Emphasis would be placed on the use of prescribed and wildland fire use to regulate woody species dominance and direct vegetation composition toward desired conditions. Priority would be placed on the restoration of shrub steppe vegetation communities held at risk due to dominance by annual and woody (invasive western juniper) species. In appropriate locations, inoculation of microbiotic crusts would be attempted to reestablish desired microdiversity. However, this would be an experimental procedure at this point.

Seedings would be implemented with appropriate mixes of adapted perennial and annual native plant species. Species mixes would be determined on a site-specific basis dependent on the probability of successful establishment and risks associated with seeding failure. Preference would be toward the use of native plant species from local wild seeds or seeds significantly adapted to the resource area.

Areas burned by wildland fire, including those subsequently rehabilitated, would be rested from grazing at a minimum for two full years or until monitoring data or professional judgment indicate that health and vigor of desired vegetation has recovered to levels adequate to support and protect upland function.

Alternative D

Upland native shrub steppe communities would be managed to attain a trend toward the desired range of conditions based on management objectives and site potential. Management actions would maintain the condition of those native communities where vegetation composition and structure are consistent with desired conditions and natural values. Nonnative seedings in poor or fair condition would be managed to restore production and vigor, as well as to improve structure and species diversity consistent with other management objectives. Nonnative seedings in good or excellent condition would be managed to maintain seeding production, improve structural and species diversity, and maintain forage production. Upland shrub cover across the landscape at moderate levels of potential would be maintained for natural values and wildlife cover values in most native vegetation communities where potential exists, and in nonnative seedings as consistent with other resource management objectives. The frequency, distribution, and ecological integrity of native stands of mountain shrubs would be restored and maintained where site potential would support these species, consistent with desired conditions and other management objectives.

Management actions would be implemented to rehabilitate and/or vegetate plant communities that do not meet desired conditions due to dominance by annual, weedy, or woody species such as invasive western juniper and decadent bitterbrush. Vegetation manipulation projects would be implemented primarily to direct trend toward desired conditions, improve structural and species diversity, and protect soil, water, and vegetation resources. Priority would be placed on the rehabilitation of shrub steppe vegetation communities held at risk due to dominancy by annual species and invasive western juniper.

Seedings would be implemented with appropriate mixes of adapted native and nonnative perennial and annual plant species; although native species would be preferred for seedings. Species mixes would be determined on a site-specific basis dependent on the probability of successful establishment and risks associated with seeding failure. Use of competitive native species would be emphasized in seedings within sites moderately and highly susceptible to degradation. Treatment configuration would emphasize natural

values as consistent with other resource management objectives.

Areas burned by wildland fire, including those subsequently rehabilitated, would be rested from grazing through at least two growing seasons following fire or until monitoring data indicate that health and vigor of desired vegetation has recovered to levels adequate to support and protect upland function.

Alternative E

Natural processes would define vegetation composition across the landscape. No vegetation rehabilitation would be implemented following wildland fire.

Management Goal 2—*Protect healthy, functioning ecosystems consisting of native plant communities. Restore degraded high-potential landscapes and decadent shrublands.*

Rationale

Beginning in the 1960s, an awareness began to evolve concerning the importance of public lands for the maintenance of biological diversity. Eventually the goals, objectives, and priorities for the fish/wildlife/botanical program were established in the national BLM "Fish and Wildlife 2000: A Plan for the Future" (BLM 1987c), signed by the Director of the BLM in May 1987 and subsequently adopted and published as policy for implementation by all field offices. The scope and design of the plan was to provide for improved management of fish, wildlife, and botanical habitats on public lands for the social and economic well-being of all Americans. Prepared in concert with its national counterpart, Oregon-Washington's plan was to carry out the goals, objectives, and priorities on the local field level. This vision incorporates cooperation with other organizations and user groups such as other Federal agencies, state agencies, conservation organizations and Challenge Cost Share/Volunteer Contribution Programs.

Recent research shows that microbiotic crusts may be indicators (e.g., an early warning system) of rangeland health. Although no relationship between total vascular plant cover and crust cover was found, there was a positive correlation between perennial bunchgrass cover and crust cover. Bare ground is often inversely related to crust cover, which could mean that a decline in crust cover produces an increase in bare soil, rather than an increase in vascular vegetation.

Especially during heavy fire years in the West, desired seed species for rehabilitation or restoration are often limited or not available. A program to collect, plant, and grow native seed to produce a seed bank of locally genetic and adapted plant species would facilitate seed planning programs.

Monitoring

In cooperation with the State of Oregon, colleges and universities, USFWS, U.S. Forest Service (USFS), Oregon Natural Heritage Program (ONHP), and private individuals, inventories to identify the distribution and density of special status plants, unique plant communities, and specialized animal habitats would be carried out. The next step would be to determine and prioritize degraded landscapes with restoration from an ecosystem perspective. Workshops and training for awareness and ability to identify these communities and species would be encouraged. Baseline inventories are being initiated which would be repeated as necessary in subsequent years to observe change and dynamics of ecosystems.

Monitoring studies would be initiated to evaluate the cost analysis and effectiveness of growing native hand-collected seed in the resource area. Since viability of native versus commercially grown seeds is usually much lower, other avenues could be explored to develop local seed banks.

Management Direction by Alternative

Alternative A

Restoration projects would be completed on a case-by-case basis, usually to resolve a crisis such as wildland fire rehabilitation, to deal with a program such as rehabilitation of gravel pits, or to deal with a program such as livestock grazing or resolve a single issue. No resource area-wide plan would be created for rehabilitation of degraded landscapes or decadent shrublands.

Alternative B

Starting from a watershed perspective, resource area-wide planning would be driven to protect native plant communities. The prioritization for vegetation restoration would be from a forage production standpoint. Restoration would be linked to increase of forage production, development of salable minerals (rock, gravel, cinder, etc.), and commodity-driven activities.

Alternative C

Starting from a watershed perspective, resource area-wide planning would be driven to protect healthy functioning ecosystems consisting of native plant communities. High priority would be given to restoration of degraded landscapes and decadent shrublands through projects such as prescribed burns, seeding of desirable native species, development of seed banks for rehabilitation, planting of shrubs/trees in riparian zones. The prioritization for restoration would be from a subbasin or watershed perspective (see Water Resources/Watershed Health section). This would maintain functioning native plant communities where they currently exist; improve plant community structure in priority areas that are currently ecologically degraded, change plant community structure where shrubs dominate grassland species of grass and forbs, and protect and restore microbiotic crusts. Locally grown native seeds or those adapted to the planning area would be preferred for rehabilitation and restoration of degraded or burned areas.

Specific projects would be developed by range, wildlife, hydrology, and botany for restoration of degraded areas. As examples: playas which have had a watering hole dug out causing rapid leaking of the water would be rehabilitated by repairing the bottom of watering hole and other methods of restoration; microbiotic crust inoculation to reintroduce crust species would be applied in degraded areas where former crusts existed or other areas where success would be expected.

A priority for restoration would be the Sheeprock area, noted by the "Lakeview Grazing Management Final Environmental Impact Statement"(1982a) to have vast areas of poor condition rangeland. The area falls within a terrestrial watershed, which ICBEMP identified as having declined substantially since historic times. Restoration methods could include prescribed burning or brush control and reseeding. Checkdams and other structures could be installed to control erosion.

Alternative D

Same as for Alternative C, but also use nonnative plant species for restoration. Nonnative seed resources would not be developed.

Alternative E

No active restoration projects would be done. Restoration would depend on natural processes.

Riparian/Wetland Vegetation

Management Goal—*Restore, maintain, or improve riparian vegetation, habitat diversity, and associated watershed function to achieve healthy and productive riparian areas and wetlands.*

Rationale

FLPMA directs and requires BLM to comply with state water quality standards and manage public land in a manner that would preserve and protect certain land in its natural condition. In addition to FLPMA, numerous laws, regulations, policies, Executive orders, and memorandums of understanding and agreements direct BLM to manage its riparian/wetland areas for biological diversity, and the productivity and sustainability for the benefit of the Nation and its economy. These directives are listed in Appendix B. While those listed in Appendix B relate specifically to planning requirements, they also relate to management in general. Specifically, FLPMA and PRIA direct BLM to "... manage public lands according to the principles of multiple use and sustained yield" and "manage the public lands to prevent unnecessary degradation ... so they become as productive as feasible." FLPMA, section 102 , also requires that public land be managed for multiple use and sustained yield in a manner that would protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values. Section 102 also mandates that public land be managed in a manner that recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber.

Riparian areas in good condition are essential to water quality improvement, fish habitat, and water quality yield. More and better quality forage is produced on healthy riparian sites. Riparian zones are the focal point and best overall indicator of watershed health.

Management of riparian/wetland areas for desired range of conditions would be implemented to attain proper functioning condition as a first step to move habitat conditions of entire watersheds and/or their components that are comprised of uplands, streams, riparian/wetland areas, and lakes and ponds toward achieving terrestrial and aquatic objectives. While all alternatives would meet objectives, the speed at which desired range of conditions is obtained would vary among alternatives. Alternatives C and E would generally provide the fastest results, followed by Alternatives D, A, and B. Management practices such as grazing, mining, recreation, forest harvesting, and

other forms of vegetation management would be designed for healthy sustainable and functional rangeland ecosystems as described in the "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington."

The next step in the attainment of desired range of conditions would be to evaluate riparian management objectives (see Appendix F2) within riparian/wetland areas and riparian conservation areas. Riparian conservation areas occupy that portion of watersheds where aquatic and riparian dependent resources receive primary emphasis for the maintenance, protection, and restoration of ecosystem processes and functions. Riparian management objectives are generally instream and riparian characteristics within the flood-prone area, expressed as values for stream channel conditions and provide criteria to help assess aquatic, water quality, and riparian/wetland goals and objective attainment of desired range of conditions. The desired range of conditions of riparian/wetland areas usually fall between proper functioning condition and the biological potential (Appendix F2) of riparian conservation areas. Riparian management objectives for vegetation would be site specific based on riparian ecological site inventory assessment. Although attainment of proper functioning condition essentially assures that stream and riparian/wetland areas function and are on an improving trend, proper functioning condition may not be and is usually not the final endpoint to reaching desired conditions. Management priorities in upland watershed areas and riparian conservation areas would focus prescriptions for the attainment of these desired conditions.

As stated above, there are a number of BLM policies relating to riparian/wetland areas include the following:

- Focus management on entire watersheds using an ecosystem approach and involving all interested landowners and affected parties;
- Achieve riparian/wetland area improvement and maintenance objectives through the management of existing and future uses;
- Ensure that new plans and existing plans, when revised, recognize the importance of riparian/wetland values, and initiate management to maintain, restore, improve, or expand them;
- All sites are making significant progress towards meeting standards of rangeland health.
- Prescribe riparian/wetland management based on site-specific physical, biological, and chemical condition and potential; and
- Use interdisciplinary teams to inventory, monitor, and evaluate management of riparian/wetland areas and to revise management where objectives are not being met.

Monitoring

Monitoring for the attainment of desired range of conditions may include the following:

- Assessment of proper functioning condition (Technical Reference 1737-11/15) and measurement of parameters identified in the riparian management objectives for ICBEMP (see Appendix F2). Attainment of proper functioning condition and riparian management objectives is considered a minimum step in the process of achieving desired range of conditions. proper functioning condition and the riparian objectives in most cases do not equate to the desired range of conditions. Determination of proper functioning condition and riparian management objectives is an interdisciplinary process.
- Most of the current information on riparian/wetland areas in the planning area has been based on assessments of riparian condition and trend. Although the BLM standard is to use proper functioning condition assessments, trend assessments can quickly provide initial information about progress toward desired conditions. Trend assessments include the following: Wildlife and aquatic monitoring, water quality monitoring, Rosgen channel typing, riparian site classification and assessment of change over time towards meeting desired range of conditions, low-level aerial photography and other remote-sensing technologies.

Management Direction by Alternative

Alternative A

Implementation of existing riparian/wetland objectives, maintenance or improvement of existing riparian/wetland exclosures, and designation or identification of riparian pastures are described by the management framework plan, allotment management plans, habitat management plans, and biological opinions. In addition, riparian/wetland areas would be managed for the

attainment of proper functioning condition. Areas not in proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Uses and activities in these riparian/wetland areas would be adjusted if current management would not allow for the maintenance or measurable progress toward the attainment of proper functioning condition. Uses and activities within the watershed would continue to occur as long as the physical and biological condition and degree of function necessary to sustain healthy rangeland ecosystems is maintained. Acquisition of riparian areas through exchange and with willing participants would be pursued. No western juniper management or other vegetation management would be allowed in Deep and Twelvemile Canyons, nor in view of Highway 140.

Restoration projects would be implemented in those areas where conditions are not naturally recovering or are currently functioning but are at risk of degradation. Grazing systems and exclusion on riparian/wetland areas would be determined on a case-by-case basis to promote or maintain proper functioning condition on a minimum of 75 percent of these areas.

Current spring developments would be maintained and new developments/waterholes, as identified in the existing plans, would be constructed. This would include water developments in intact playas and lakebeds.

Roads could be maintained to minimize impacts to riparian zones.

Alternative B

Riparian/wetland areas would be managed for uses and activities that emphasize commodity production, while providing for the attainment of proper functioning condition, riparian management objectives, and the desired range of conditions of riparian conservation areas.

Areas not in proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Managed uses and activities in riparian conservation areas would be allowed as long as there is progress toward attainment of State water quality standards, proper functioning condition, and riparian management objectives. This alternative focuses specifically on the protection and maintenance of the area within the riparian conservation area and allows those commodity uses and activities in the remaining watershed to occur. Any use or activity within the riparian conservation area that would adversely affect water quality standards and/or riparian/wetland resources would be excluded from the riparian conservation area. Enforcement would be in the form of buffered exclusion areas or the use of temporary and permanent fencing. Management options for uses and activities would allow for measurable progress toward the attainment of water quality, proper functioning condition, and riparian management objectives within riparian conservation areas at a positive annual rate. The desired range of conditions would be set at a lower level than other alternatives so long as objectives for water quality and proper functioning condition are met. Restoration activities, such as intensive woody riparian vegetation plantings and the installation of instream structures, would be used in areas unable to attain proper functioning condition, riparian management objectives and the desired range of conditions through changes in management alone.

Restoration projects would be implemented in those areas where conditions are not naturally recovering or are currently functioning but are at risk of degradation. Grazing systems and exclusion on riparian/wetland areas would be implemented to promote or maintain proper functioning condition on a minimum of 75 percent of these areas.

Current spring developments would be modified to allow riparian function while still allowing for livestock water availability. Water developments would be allowed in intact playas and lakebeds only if development would not negatively impact special status plant or animal species.

Roads could be maintained to minimize impacts to riparian zones.

Alternative C

Riparian conservation areas would be identified and delineated.

Riparian/wetland areas would be managed for uses and activities within the watershed that emphasize maintenance, improvement, and/or restoration of naturally-occurring values that provide for the attainment of water quality, proper functioning condition, riparian management objectives, and desired range of conditions of riparian conservation areas. Restoration activities, such as intensive woody riparian vegetation plantings, vegetation manipulation, and installation of

instream structures, would be used in areas unable to attain proper functioning condition, riparian management objectives, and the desired range of conditions through changes in management alone.

Areas not in proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Uses and activities within the riparian conservation area and contributing upland watersheds would be allowed as long as there is unimpeaded progress toward attainment of State water quality standards, proper functioning condition, and riparian management objectives.

Management options focus on uses and activities that allow for the protection, maintenance, and restoration of riparian conservation areas and upland watersheds and the unimpeaded progress toward the attainment of water quality standards, proper functioning condition, and riparian management objectives within riparian conservation areas. Spring sources would be protected as needed from trampling by livestock and wild horses. All BLM managed and maintained roads would be removed from riparian conservation areas.

The acquisition of riparian areas from willing private landowners through exchange or purchase would be a priority.

Alternative D

Riparian conservation areas would be identified and delineated.

Riparian/wetland areas would be managed for uses and activities within the watershed that emphasize the maintenance or improvement of naturally-occurring values while providing for commodity production and the attainment of proper functioning condition, riparian management objectives, and desired range of conditions of riparian conservation areas. Restoration activities, such as intensive woody riparian vegetation plantings, vegetation manipulation, and installation of instream structures, would be used in areas unable to attain proper functioning condition, riparian management objectives and the desired range of conditions through changes in management alone. Prior to structural work, management must be in place that would allow improvement in stream conditions.

Areas not in proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Uses and activities within the riparian conservation area and contributing upland watersheds would be allowed as long as there is measurable progress towards attainment of State water quality standards, proper functioning condition, and riparian management objectives. Specifically, in fenced Federal range allotments, BLM riparian sites that are not in proper functioning condition and where it is determined that livestock are contributing to the condition, livestock would be excluded. Spring developments would be modified to promote natural function where possible, but still allow livestock and wildlife access to developed water.

Management options focus on uses and activities that allow for the protection and maintenance of riparian conservation areas and upland watersheds and the measurable progress toward the attainment of water quality, proper functioning condition, and riparian management objectives within riparian conservation areas at a positive annual rate. All BLM managed and maintained roads would be removed or relocated from riparian conservation areas if they are impacting the functioning of the stream.

The acquisition of riparian areas from willing private landowners through exchange or purchase would be a priority.

Alternative E

Commodity production would be excluded from all public lands. Noncommodity and public uses and activities would be allowed along streams, around riparian/wetland areas, and in associated watersheds, if they would promote or have no effect on water quality, proper functioning condition, and riparian management objectives within riparian conservation areas while protecting and enhancing natural values.

Streams, water bodies, and riparian conservation areas not meeting minimum State water quality standards, proper functioning condition, and riparian management objectives would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Noncommodity uses and activities within the riparian conservation areas and contributing upland watershed areas that adversely affect water quality and/or lead to stream channel or riparian/wetland resource degradation would be adjusted, restricted, or limited if water quality, proper function-

ing condition, and riparian management objectives cannot be attained or maintained with existing management.

Spring developments would no longer be maintained. Other livestock waters critically needed for wildlife use would be maintained.

Forest and Woodlands

Management Goal 1—*In commercial (pine) forest stands, maintain or restore forest health and meet wildlife habitat needs.*

Rationale

ICBEMP has documented declines in forest health of the interior pine forests (USDI-BLM 2000b). Exclusion of natural fire has resulted in overstocked stands and a large increase in the western juniper and white fir components of these stands. They are less resilient and are more susceptible to disturbances such as insect attack, drought, and wildland fires. Wildlife dependent on these forests are also at risk.

BLM policy requires that forest lands be classified into management categories, and this classification has been shown in USDI-BLM (2000b). Most commercial forest lands in the planning area have been classified into the category "Lands Where Forest Management is for the Enhancement of Other Uses." These are areas where forest management activities are made for the benefit of other resource uses or values. These lands would not provide an assigned allowable sale quantity of commercial or noncommercial timber volume, due to the relatively low volumes per acre, scattered location of the forest lands (making efficient management impractical), and the presence of other high resource values to protect. However, forest products could be produced as a byproduct of management activities. Commercial forest lands not classified in this category are those within ACEC's whose management plans specifically exclude planned or sustained production of forest products. Other potential areas with such restrictions are Native American gathering areas for plant products, old growth western juniper areas, and areas with high cultural values.

Monitoring

An operations inventory is done on a periodic basis to monitor stand composition and structure. Stocking surveys are done before and after thinnings and other treatments.

Management Direction by Alternative

Alternatives A–D

Due to the scattered locations of the commercial stands, harsh sites, and low volumes per acre, these lands are not suitable for intensive management for forest products. No allowable sale quantity would be declared. However, these forest stands can be managed in concert with surrounding lands to provide old growth wildlife habitat, hiding cover for mule deer, and watershed and scenic values. Management treatments to reduce overstocking, control competing vegetation, remove invasive western juniper or white fir, and reduce ground and understory ladder fuels, would improve forest health and increase resistance to insect and disease outbreaks and wildland fires.

Whenever adjacent lands are treated, whether private or national forest, treatment of the scattered BLM forest stands should be considered. Potential treatments include selective cuts focused on thinning, culturing around old growth trees in good condition, precommercial thinning, and prescribed fire to reduce ground fuels. Wildland fire use could be initiated once fuel loadings are reduced to more natural levels. Management of commercial forest land within ACEC's and other special areas would be guided by their specific management plans.

Alternative E

No stand treatments would be done. Suppression of wildland fire on commercial forest lands would be limited to the few areas where adjacent private property is located.

Management Goal 2—*Restore productivity and biodiversity in western juniper woodlands and quaking aspen groves.*

Rationale

Under natural conditions, periodic fires killed western juniper saplings. Western juniper distribution was generally limited to rocky areas with only light grasses and other low fuels to carry ground fires. These "natural" western juniper sites today are the "old growth" sites, containing trees hundreds of years old. Reduction and exclusion of natural fires by grazing of fine fuels and fire suppression has allowed western juniper to expand in area as well as density for the last 130 years. Western juniper is an aggressive competitor for water, and has replaced, or is in the process of

replacing, native vegetation on many invaded sites. These are the "invasive" western juniper less than 130-years old. A loss of available forage for wildlife and domestic livestock, as well as increased soil erosion, has resulted. Quaking aspen stands have also been invaded by western juniper, and many are in decline from severe western juniper competition, as well as livestock browsing of sprouts.

The western juniper woodlands are considered "non-commercial" forest lands because the growing sites can only produce this noncommercial tree species. As described above, most of the woodland stands are not naturally-occurring. In the absence of periodic natural fires, western juniper are spreading onto sites naturally occupied by other plant communities, notably mountain big sagebrush. As described under Management Goal 1, BLM policy requires forest lands, even these unnatural stands, be classified into one of four forest management categories. The western juniper woodlands, both old growth and invasive, have been classified as "Lands Where Forest Management is for the Enhancement of Other Values." In other words, production of wood products is not the objective of managing the western juniper woodlands. No allowable sale quantity is assigned to these lands, but removal of wood products to meet other resource objectives is allowed.

Monitoring

Monitoring of site conditions on western juniper woodlands and quaking aspen groves would be done by whichever specialist initiates a treatment. For such monitoring information, see the sections on rangeland/grazing, wildlife, watershed, and riparian vegetation.

Management Common to Alternatives A–D

Inventory information for the western juniper woodlands would be compiled on an ongoing basis. The ecological site inventory, which identifies old growth western juniper sites on rocky ridges and other fire-protected areas, as well as invasive western juniper, would be completed for the LRA in 2001. Additional geographic information systems and inventory work would show western juniper stands by age class and canopy closure. These future inventories would allow much more precise management of western juniper lands to maximize the mix of other resource values presently inhibited by the western juniper cover.

When western juniper treatments are planned, Native American values or use would be evaluated. For example, traditional plant-gathering areas would need special protection. Affected Tribes would be contacted at an early stage in project planning.

Management of western juniper woodlands within RNA's, ACEC's, or other SMA's, would be guided by the specific management plan for each area.

When evaluating areas for western juniper removal (including areas for commercial and public wood cutting), priority areas to treat would be areas where the western juniper is most adversely affecting other resources. These include quaking aspen groves, riparian areas, greater sage-grouse leks and primary habitat, deer winter range, bighorn sheep range, and younger, invasive western juniper in old growth western juniper sites. Age class of the western juniper, soil type, aspect, understory vegetation, and presence of noxious weeds would also be considered. Western juniper areas would be considered high priority for treatment where canopy cover is under 15 percent (areas that still have a grass and brush understory). These stands are more economically treatable due to the smaller size of western juniper trees and the potential for use of prescribed fire for effective control. Sales and other disposals of firewood, posts, poles, boughs, and other western juniper products, would be made where compatible with maintenance of other resource values. Combinations of one or more treatment methods (cutting, mechanical, prescribed fire) could be made in a treatment area.

Management Direction by Alternative

Alternative A

Western juniper woodlands are managed to meet public demand for timber and vegetative products, including firewood, posts, poles, boughs, and berries. No specific allowable cut or harvest goals are set. Some area-specific restrictions were required by the management framework plan. Recovery of biomass for generation of electrical energy is a recent development, and therefore was not addressed in the existing management framework plans. The only old growth western juniper management guideline, which is included in the present management framework plan, would prevent cutting of old trees for wildlife habitat purposes. However, protection of the old growth western juniper stands has been a management goal for several years. Quaking aspen groves are managed to maintain stand health and to meet wildlife habitat needs.

Alternative B

Commercial and public harvest within existing and newly-created cutting areas would be maximized. Up to 75 percent of early- to mid-successional (invasive) western juniper stands would be treated by fire or mechanical cutting over the life of the plan. Recovery of biomass for energy production would be allowed on western juniper treatment areas. This would involve machine skidding of material to landings and creation of temporary-use roads. Old growth western juniper stands would be maintained or enhanced. All quaking aspen stands in the planning area with invasive western juniper would be treated early in the life of the plan. Invasive western juniper would be treated using prescribed fire or mechanical cutting on 6,000 to 12,000 acres of bighorn sheep range on Lynch Rim (Fish Creek Rim) (see Map V-2). Treatments would reduce invasive western juniper by 30 to 70 percent within each of these areas over the life of the plan. Any treatments occurring within the WSA would be consistent with BLM's wilderness IMP.

Alternative C

Commercial and public wood cutting would be allowed on only 10 percent of mid- to closed-canopy invasive stands over the life of the plan. Up to 75 percent of early to mid-successional stands would be treated using prescribed fire or mechanical cutting over the life of the plan. Recovery of biomass for energy production would be allowed on western juniper treatment areas. This would involve machine skidding of material to landings and creation of temporary-use roads. Old growth western juniper stands would be maintained or enhanced. All quaking aspen stands in the planning area with invasive western juniper would be treated early in the life of the plan. Invasive western juniper would be treated using prescribed fire or mechanical cutting on 12,000 to 25,500 acres of bighorn sheep range on Lynch Rim (Fish Creek Rim), South Warner Rim, Coleman Rim, and South Abert Rim (see Map V-2). Treatments would reduce invasive western juniper by 30 to 70 percent within each of these areas over the life of the plan. Any treatments occurring within WSA's would be consistent with BLM's wilderness IMP.

Alternative D

Commercial and public wood cutting would be allowed on 50 percent of the mid- to closed-canopy invasive stands over the life of the plan. Up to 75 percent of the early- to mid-successional stands would be treated using prescribed fire or mechanical cutting over the life of the plan. Recovery of biomass for energy production would be allowed on western juniper treatment areas. This would involve machine skidding of material to landings and creation of temporary-use roads. Old growth western juniper stands would be maintained or enhanced. All quaking aspen stands in the planning area with invasive western juniper would be treated early in the life of the plan. Invasive western juniper would be treated using prescribed fire or mechanical cutting on 12,000 to 25,500 acres of bighorn sheep range on Lynch Rim (Fish Creek Rim), South Warner Rim, Coleman Rim, and South Abert Rim (see Map V-2). Treatments would reduce invasive western juniper by 30 to 70 percent within each of these areas over the life of the plan. Any treatments occurring within WSA's would be consistent with BLM's wilderness IMP.

Alternative E

No commercial or public wood cutting would be allowed. Natural processes, including wildland fire, would regulate western juniper woodlands. Since no commodity production would be allowed, no material would be available for biomass recovery. Old growth stands would not receive any active management treatment. No quaking aspen stands would be treated to eliminate invasive western juniper.

Special Status Plant Species

Management Goal—*Manage public lands to maintain, restore, or enhance populations and habitats of special status plant species. Priority for the application of management actions would be: (1) Federal endangered or threatened (T&E) species, (2) Federal proposed species, (3) Federal candidate species, (4) State listed species, (5) BLM sensitive species, (6) BLM assessment species, and (7) BLM tracking species. Protect, restore, and enhance the variety of plant species and communities in abundance and distributions that provide for their continued existence and normal functioning.*

Rationale

Section 102.8 of FLPMA requires that public land be managed to protect the quality of ecological and environmental values, and where appropriate, to protect their natural condition.

The "Endangered Species Act" mandates management

that leads to the conservation or recovery of federally listed T&E species. This Act, BLM policy, and Oregon State law (1987) also encourages management to protect special status species that are not currently listed as T&E.

Most plant species assigned to a special status category are limited in their distributions, populations, or habitats and may be at risk over various geographic areas. It is in the public interest to prevent the need for Federal listing under the "Endangered Species Act" where evidence suggests that land uses are adversely affecting special status species not currently listed as threatened or endangered. There are both socioeconomic and biological benefits associated with conserving species to avoid Federal listing.

Maintenance, restoration, or enhancement of populations or habitat may each represent appropriate BLM management depending on the habitat needs of specific circumstances of a species. Restoration or enhancement may not always be the only clear choice for BLM action regarding special status species. One potential limitation that could delay restoration or enhancement actions is that the biological mechanisms adversely affecting a species may not be understood well enough to identify needed management changes. Maintenance may be a preferred course of action where resource conditions are already considered to be a high quality.

Conservation agreements with USFWS detail monitoring, inventory, and plans to help with the conservation of the plants and their habitat; through this type of agreement, Federal listing can be postponed or negated by increasing the possibility of protection.

The ONHP (1993) designates special ecosystems as "cells" to represent unique ecosystems that make a significant contribution to biodiversity within the Basin and Range Physiographic Province. The "Natural Heritage Act" of 1979, as revised, specifies that these cells represent Oregon's natural heritage resources. As such, BLM designation of these areas protects one or more plant community elements and may protect special status plants. One of the goals for an RNA is to preserve gene pools of endangered plants; and within the BLM, RNA's are managed by ACEC's. Creating an ACEC for the plant community or special status plant species helps facilitate protection, restoration, and enhancement of those plant species.

Monitoring

Monitoring would include surveys to determine the distribution, resource conditions, and trends of special status plant species and representative habitats. Any new ground disturbing activities or NEPA actions would require a survey clearance for presence or absence of special status plants.

ACEC/RNA's are monitored on a regular basis to determine if guidelines are being met; and for the condition of the areas values, such as the plant communities and populations. RNA's also increase possibilities of scientific research being carried out on the individual plants. Allotments are evaluated on a regular basis and at that time ACEC/RNA monitoring would be part of the process.

Management Direction by Alternative

Alternative A

Special status plant species habitats and populations would be managed so that BLM actions do not contribute to the need to list these species as federally threatened or endangered. Management for these species would emphasize maintenance rather than restoration and enhancement. Management would also be oriented toward providing habitat conditions that favor individual special status species. Conservation agreements would be written and implemented with the USFWS for selected species at highest risk.

The 9,047-acre Lost Forest ACEC/RNA, which meets the ONHP cell needs, would be retained. This disjunct forest represents a unique ecosystem and different gene pool than the "normal" ponderosa pine forests in Oregon. Researchers continue to work in the area. This existing ACEC/RNA and its associated values would be considered when allotments in the ACEC/RNA come up for evaluation.

Alternative B

All special status species habitats or populations would be managed so that BLM actions do not contribute to the need to list theses species as federally threatened or endangered. Management would be oriented toward providing habitat conditions that meet individual species requirements.

ACEC/RNA management would be the same as under Alternative A.

Alternative C

This alternative would include the most aggressive

measures for special status species management. Restoration or enhancement of habitats and populations would occur in areas where it would be biologically sound and reasonable to do so. Maintenance would only be considered where habitat or population conditions are considered to be at or near their potential. This is in contrast to Alternatives A and B, which would include measures for maintenance regardless of habitat or population quality.

Conservation and recovery of special status plant species would require:

- Acquiring basic information of distribution and habitat requirements.
- Determination of kind and degree of threats.
- Monitoring and inventory data for the development of sound plans and management actions.
- Development and implementation of species or habitat management plans such as conservation agreements written and conducted with the USFWS for all of the special status plant species that have the BLM ranking of Bureau sensitive or the former Class Two ranking of the USFWS.
- Possible studies of the genetics and other biological parameters to determine what makes the plant species rare and survival conditions for plant and habitat.

These actions would also require:

- Analyzing existing data and identifying gaps in data/information.
- Organizing and use inventories, monitoring and management information through a standardized data base.
- Identifying actions and funding necessary to conserve, recover, and continuously maintain special status plant species.
- In response to the NEPA process, scheduling necessary surveys at the appropriate time of year to locate and identify special status plants and take appropriate management actions which might require avoidance or mitigation.
- Ensuring that management actions necessary to protect, conserve, and recover special status plants species are implemented, monitored, and tracked.
- Seeking to acquire appropriate lands having populations of species not well protected under existing ownership, such as Oregon semaphore grass.

Twelve new ACEC's would be designated (129,122 acres), one existing area would be expanded (Abert Rim addition of 18,019 acres) and one, the 9,047-acre Lost Forest ACEC/RNA, would be retained in order to meet ONHP cell needs. Of these 13 new or expanded ACEC's, 10 areas would contain RNA's and 9 of those 10 areas (57,063 acres) would contain special status plant species. Some management for maintenance in these areas could require avoidance or mitigation measures that have impacts on land uses and allotment parameters.

Alternative D

Management would be the same as under Alternative C, except ACEC designations would be as follows. Twelve new ACEC's would be designated (123,642 acres), one existing area would be expanded (Abert Rim addition of 18,019 acres) and one, the 9,047-acre Lost Forest ACEC/RNA, would be retained in order to meet ONHP cell needs. Of these 13 new or expanded ACEC's, 10 areas would contain RNA's and 9 of those 10 areas (29,204 acres) would contain special status plant species. Some management for maintenance in these areas could require avoidance or mitigation measures that have impacts on land uses and allotment parameters.

Alternative E

Natural processes would determine future conditions, except for federally listed species in need of management as specified in recovery plans developed by the USFWS.

No new ACEC's would be designated and existing ones would be revoked. Natural processes would be allowed to operate with no inventories, monitoring, or designation of these special areas.

Noxious Weeds and Competing Undesirable Vegetation

Management Goal—*Control the introduction and proliferation of noxious weeds and competing undesirable plant species and reduce the extent and density of established populations to acceptable levels.*

Rationale

FLPMA and PRIA direct BLM to "manage public lands according to the principles of multiple-use and sustained yield" and "manage the public lands to prevent unnecessary degradation ... so they become as productive as feasible." The introduction and spread of noxious weeds and undesirable plants within the planning area contributes to the loss of rangeland productivity, increased soil erosion, reduced species and structural diversity, loss of wildlife habitat, and in some instances may pose a threat to human health and welfare. The "Carlson-Foley Act" (Public Law 90-583) and the "Federal Noxious Weed Act" (Public Law-93-629) direct weed control on public land. Protection of natural resource values depends on educating people about the negative impacts of weeds and what actions agencies and individuals can take to prevent the weedy species from moving in and becoming established.

Monitoring

Evaluation of treatments would continue in cooperation with the State of Oregon, Lake County, and private interests as well as neighboring counties and Federal jurisdictions. Inventories to identify new introductions, distribution, and density of noxious weed populations would be carried out on an annual basis in cooperation with the aforementioned entities.

Management Common to Alternatives A–D

Noxious weed prevention and control would continue to be a priority for the resource area. Under each of these alternatives, weeds would be controlled in an integrated weed management program which includes prevention education and cultural, physical, biological, and chemical treatments. Preventative measures such as public education and livestock and wildlife management would be employed to maintain or enhance desirable vegetation cover and reduce the distribution and introduction of noxious weed seed and plant parts. Mechanical and manual control methods and burning treatments would physically remove noxious weeds and unwanted vegetation; biological controls would introduce and cultivate factors such as insects and pathogens that naturally limit the spread of noxious weeds; and chemical treatments using approved herbicides would be applied where mechanical and/or biological controls are not feasible. Integrated weed management would be implemented in cooperation with the State of Oregon, Lake County, private interests, and neighboring counties and Federal jurisdictions.

Currently there are individual weed management plans for two specific geographic areas—the "Warner Basin Weed Management Area Plan" and the "Abert Rim Weed Management Area Plan." A Greater Abert Weed Management Area would be proposed which would include the existing Abert Rim Weed Management Area and the rest of the Lake Abert Subbasin. The plan would be developed in consultation and cooperation with private landowners, ODFW, USFWS, USFS, and other stakeholders in the Lake Abert Basin. The plan would be patterned after the "Warner Basin Weed Management Area Plan."

The LRA weed control program is designed to address the dynamic nature of noxious weeds such as increasing numbers of species, different plant physiology for the various species, changing conditions of infestations, and changing technologies. Selection of the appropriate control method would be based on such factors as the growth characteristics of the target species, size of the infestation, location of the infestation, accessibility of equipment, potential impacts to nontarget species, use of the area by people, effectiveness of the treatment on target species, and cost. Depending on the plant's characteristics, these methods may be used individually or in combination and may be utilized over several years. Due to the length of seed viability, annual germination of seed from previous years, and the characteristics of certain plants, treatments could occur annually for a period of 10 or more years. Because weed infestations vary annually due to new introductions, spread of existing infestations and the results of prior year treatments, site-specific reviews of known locations would be conducted annually prior to initiating weed treatment activities.

Herbicide treatment: Herbicides that may be used are those approved in the "Vegetation Treatment on BLM Lands in Thirteen Western States EIS" (1991), or any that are approved through an amendment or other agency approval process (see Appendix G for the current list of approved chemicals). Application would take place only in accordance with the manufacturer's label and by qualified/certified applicators. Methods of application include wiping or wicking, backpack

spraying, spraying from a vehicle with a hand gun or boom, aerial spraying, or other approved methods.

Special management areas:

WSA's—Noxious weeds occurring in WSA's would be treated with methods that are in accordance with the provisions of Chapter III.C.2 of the Bureau's IMP.

ACEC's—In the Warner Wetlands ACEC, weeds would be managed according to the "Warner Basin Weed Management Area Plan." In the Lake Abert ACEC and the proposed Abert Rim addition, weeds would be managed according to the "Abert Rim Weed Management Area Plan."

Management Direction by Alternative

Alternative A

Continue to apply approved weed control methods including mechanical, biological, and chemical treatments as identified in "Vegetation Treatment on BLM Lands in Thirteen Western States FEIS and ROD" (1991), "Supplement to the Northwest Area Noxious Weed Control Program FEIS and ROD" (1987), and the 1994 "Integrated Noxious Weed Control Program Environmental Assessment" (OR-013-93-03). Emphasis is on detection of new invaders and inventory and control in proven hot spots such as roads, rights-of-way, waterholes, and recreation sites.

Alternative B

Given the increased commodity production and extraction under this alternative, the potential for the introduction of new noxious weed species and additional sites of existing noxious weed species is very high. Therefore, increased efforts in prevention education and inventory would be implemented to detect new sites and treat them before they spread. Weed control methods would be the same as those in Alternative A.

Alternative C

Weed invasions threaten natural values and the proper functioning of natural systems. Under this alternative the weed program would be most aggressive. There would be a zero tolerance for noxious weeds in the resource area. Eradication attempts would occur on all existing sites. Increased efforts in inventory to detect and prevent the establishment of new invaders, and complete restoration of all weed sites to desirable plant species would be the goal. Education and outreach efforts would be increased and expanded to include areas outside of Lake County in an effort to "head-off" species that may spread into the resource area.

Alternative D

Same as for Alternative A, but with an expanded program to inventory areas that are less disturbed, remote, or previously uninventoried. Weed sites would be restored to desirable species. Control efforts would be expanded to include any new sites detected. Education and outreach efforts would be expanded to include areas outside of Lake County in an effort to "head-off" species that may spread into the resource area.

Alternative E

Under this alternative, only high priority noxious weed species and infested areas on BLM lands would be treated to protect adjacent private property.

Soils

Management Goal—*Manage soil on public lands to maintain, restore, or enhance soil erosion class and watershed improvement and protect areas of fragile soil using best management practices (BMP's).*

Rationale

Soils are the foundation for all vegetation growth in the planning area. Without a good base of healthy, productive, intact soil, management goals for vegetation and watershed and ultimately wildlife and livestock cannot be achieved. Soils in the planning area are semiarid, young, and poorly developed. Chemical and biological soil development processes such as rock weathering, decomposition of plant materials, accumulation of organic matter, and nutrient cycling proceed slowly in this environment. Soil recovery processes are also slow; therefore, disruption of soil can lead to long-term changes in soil ecology and productivity.

Monitoring

Soil health and condition would be monitored by conducting project reviews for implementation and effectiveness of BMP's and assessing undisturbed sites for various parameters including erosion potential and groundcover. Monitoring by other programs such as livestock grazing and watershed would also consider soil condition and health.

Management Direction by Alternative

Alternative A

Soils protection and management would be provided to soil disturbing projects on a case-by-case basis. Current grazing practices and watershed management would be continued. Road maintenance and new road construction would continue at current rates: approximately 100 miles of road are maintained annually with no new roads constructed.

Alternatives B-E

BMP's to protect and manage soil would be implemented for all ground-disturbing activities including new projects, livestock grazing, and road maintenance and construction. See Appendix D for a complete description of best management practices.

Water Resources/Watershed Health

Management Goal 1—*Protect or restore watershed function and processes which determine the appropriate rates of precipitation capture, storage, and release.*

Rationale

All the land in the resource area is part of a watershed. These discrete areas process water as it comes into the system as precipitation. Watersheds receive precipitation and then lose it to the atmosphere by evaporation, evapotranspiration, and sublimation. Watersheds move water across the land surface through the shallow subsurface zone (soil mantle) and deeper groundwater aquifers. Watershed function is controlled by climate, geology, topography, type and amount of vegetation, and soil characteristics.

Vegetation and soil condition cycle naturally over time in response to climate, fire, and other natural ecological processes. The rate water is captured by the watershed, the amount of storage available, and the rate and location of water release depends on the amount and type of vegetation and type and condition of soil. These parameters are effected by land management activities and uses.

The watersheds provide the environment to which species, populations, and communities have adapted. Watersheds provide the habitat formed by natural processes which support the distribution, diversity and complexity of animal and plant species.

The rangelands in the LRA are managed according to the "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" approved by the Secretary of the Interior in 1997. Subsequent guidelines, to be developed for other uses, would guide the management of watersheds. These standards and guidelines provide a clear statement of agency policy and direction for those who use public lands and for those who manage and are accountable for public land conditions.

The objectives of the rangeland health regulations referred to above are: "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 productive, healthy public rangelands."

Healthy watersheds are the foundation of rangeland health objectives. To help meet these objectives, the regulations on rangeland health identify fundamental principles providing direction in the management and use of rangeland ecosystems.

A hierarchy, or order, of ecological function and process exists within each ecosystem or watershed. Each system consists of four primary, interactive components: a physical component, a biological component, a social component, and an economic component. This perspective implies that the physical function of an ecosystem supports the biological health, diversity, and productivity of that system. In turn, the interaction of the physical and biological components of the ecosystem provides the basic needs of society and supports economic use and potential.

The Fundamentals of Rangeland Health stated in 43 CFR 4180 are:

1) 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.

2) 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.

3) 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.

4) Habitats are, or are making significant progress toward being, restored or maintained for Federal T&E species, Federal proposed, Category 1 and 2 Federal candidate and other special status species.

The fundamentals of rangeland health combine the basic precepts of physical function and biological health with elements of law relating to water quality, and plant and animal populations and communities. They provide direction in the development and implementation of the standards for rangeland health.

Monitoring

BMP implementation and effectiveness monitoring would be conducted on a project-by-project basis. A range of vegetation and soils conditions, stream types and conditions, and projects would be monitored.

Common to All Alternatives

Watershed management would incorporate required state and Federal laws which protect the watershed health. BMP's are required by the CWA and developed during the NEPA process. Watersheds would be further protected by the evolution of watershed science and an increase of information and data for the resource area. This is incorporated into management through multi-scale analyses such as subbasin review, watershed analysis, and site-specific environmental assessment. The implementation of water quality management plans would improve the watershed condition of watersheds with water quality limited segments as defined by section 303(d) of the CWA. The criteria used to determine priority streams are presence of T&E species or habitat, water quality limited designation, an active watershed council, and willingness of other agencies to participate. High priority watersheds are:

- Honey Creek Watershed (1712000706);
- Twentymile Watershed (1712000704);
- Bridge Creek Subwatershed (171200052701);
- Buck Creek Watershed (1712000529);
- Guano Valley Watershed (1712000824); and
- Alkali Lake Watershed (1712000510).

Management Direction by Alternative

Alternative A

Management activities and uses would continue on public land which allow healthy upland vegetation conditions. Uses and activities which address water resource-related objectives identified in existing planning documents, such as objectives relating to control of erosion and sedimentation, would be emphasized. Uses and activities would be managed to meet rangeland health standards.

Implementation of existing watershed health objectives to maintain or improve watershed condition would continue. Management activities and uses within a watershed would continue to occur as long as the physical and biological condition and degree of watershed function necessary to sustain watershed health is maintained.

On case-by-case basis, close unnecessary roads or where resource damage is occurring. Construct and maintain roads to minimum standards. Continue existing upland grazing systems and exclosures.

Alternative B

Watersheds would be managed for uses and activities that emphasize commodity production, while providing for the attainment and maintenance of minimum watershed health criteria, proper functioning condition, and desired range of conditions. Public uses and activities would be allowed in watersheds with water quality limited stream segments as long as there is progression toward attainment of State water quality standards.

Management of watersheds with streams and water bodies not meeting minimum State water quality standards would focus on protection and maintenance of the area along the instream channels and within riparian conservation areas and allows those commodities uses and activities in the remaining watershed to occur. No activities would be allowed within the riparian conservation area that would adversely affect water quality, riparian habitat, or wetlands. Implementation would be in the form of buffered exclusion areas

or the use of temporary and permanent fencing.

Management uses and activities would be the primary tool for maintenance and restoration of upland vegetation and soils condition. Close unnecessary roads or where resource damage is occurring. Construct and maintain roads to meet BMP's. Upland livestock grazing would meet minimum standards.

Alternative C

Watersheds would be managed for uses and activities that emphasize restoration, protection, or improvement of watershed function and processes, and deemphasize commodity production. This alternative would provide for the attainment and maintenance of water quality standards, proper functioning condition, and desired range of conditions of the watersheds. Active restoration of native plant communities would be used in areas unable to attain the desired range of conditions through changes in management.

Watersheds with streams and water bodies not meeting minimum State water quality standards would be managed to attain an upward trend in the composition and structure of upland and riparian vegetation communities and desired soil conditions. Management activities and uses within the watershed that adversely affect infiltration rates, soil moisture storage, or safe release of water would be adjusted, restricted, or limited if desired vegetation and soil conditions could not be attained or maintained.

Management options would focus on uses and activities which allow for the protection, maintenance, and restoration of upland watershed health and measurable progress toward the desired condition of vegetation and soils.

A priority for restoration would be the Sheeprock Allotment. This area was identified in ICBEMP as a watershed (habitat) that has declined substantially since historical times. Restoration methods could include prescribed burning or plowing and reseeding. Checkdams and other structures could be installed to control erosion.

Close and rehabilitate all roads on public lands not required by law. Do not increase the road density in any watershed with a low road density (less than 0.7 miles per sqaure mile). Minimize new road construction. Livestock grazing would be managed to promote healthy watershed which include productive soil, native vegetation, and biological crusts. Prohibit management activities and uses, except when mandated by law, in perennial and intermittent drainages where such activities would adversely impact watershed function or processes.

Alternative D

Watersheds would be managed for uses and activities that emphasize restoration, protection, or improvement of watershed function and processes while providing for commodity production. This alternative would provide for the attainment and maintenance of water quality standards, proper functioning condition, and desired range of conditions of the watersheds. Active restoration of native plant communities would be used in areas unable to attain the desired range of conditions through changes in management.

Watersheds with streams and water bodies not meeting minimum State water quality standards would be managed to attain an upward trend in the composition and structure of upland and riparian vegetation communities and desired soil conditions. Management activities and uses within the watershed that adversely affect infiltration rates, soil moisture storage, or safe release of water would be adjusted, restricted, or limited if desired vegetation and soil conditions could not be attained or maintained.

Management uses and activities would be the primary tool for maintenance and restoration of upland vegetation and soils condition. Management options would focus on uses and activities which allow for the protection, maintenance, and restoration of upland watershed health and measurable progress toward the desired condition of vegetation and soils.

A priority for restoration would be the Sheeprock Allotment. This area was identified in ICBEMP as a watershed (habitat) that has declined substantially since historical times. Restoration methods could include prescribed burning or plowing and reseeding. Checkdams and other structures could be installed to control erosion.

On a case-by-case basis, close and rehabilitate all roads on public lands not needed for private land access, permit administration, law enforcement, or fire protection. Livestock grazing would maintain minimum condition of a healthy watershed which include mostly productive soils, native vegetation, and some biological crusts.

Alternative E

Commodity production would be excluded from all public lands. Watersheds would be managed for uses and activities that emphasize restoration, protection, or improvement of watershed function. Any attainment and maintenance of water quality standards, proper functioning condition, and desired range of conditions of the watersheds would be at a natural rate with no active restoration.

Close and rehabilitate all roads on public lands except those required by law. Allow no new roads except when required by law. No livestock grazing would be permitted. Remove existing exclosures.

Management Goal 2—*Ensure that surface water and groundwater influenced by Bureau of Land Management (BLM) activities comply with or are making significant progress toward achieving State of Oregon water quality standards for beneficial uses as established by the Oregon Department of Environmental Quality (ODEQ).*

Rationale

The "Federal Water Pollution Control Act" (commonly known as the "Clean Water Act" [CWA]) of 1977, as amended, required the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters. BLM is responsible to manage the requirements of the Act on BLM-administered lands, but primacy in implementing the Act is retained by the State of Oregon. BLM is required to maintain water quality where it presently meets Environmental Protection Agency (EPA)-approved Oregon State water quality standards and improve water quality on public lands where it does not meet standards. State developed total maximum daily loads and State approved water quality management plans are required for watersheds containing water quality limited segments (Table 2-17 and Appendix F3), as defined by section 303(d) of the CWA. In addition to the Act, numerous laws, regulations, policies, and Executive orders direct BLM to manage for water quality for the benefit of the Nation and its economy (refer to Appendix B, Planning Criteria, Legal Authorities, and Relationship to other Plans). A discussion of the LRA strategy for developing water quality restoration plans is in Appendix F3.

Water quality is important not only for human use but also for proper ecological function. Management practices such as grazing, mining, recreation, forest harvesting, and ecological restoration would be designed for healthy sustainable streams and good water quality.

Monitoring

Water quality monitoring would be conducted for various parameters comparing water quality standards to current condition.

Common to all Alternatives

Establishment of total maximum daily loads for CWA section 303(d) listed water bodies is the responsibility of the State of Oregon with approval of by EPA. It is also the State of Oregon's responsibility to develop a water quality management plan which details how the total maximum daily load would be implemented. It is BLM's responsibility to provide them a water quality restoration plan for the land they manage with in a watershed containing a water quality limited segment. Each water quality restoration plan would identify adverse condition that BLM can improve within the watersheds which affect listed stream segments and specify management actions necessary to restore water quality and meet Oregon water quality standards.

Elements of a water quality restoration plan per USFS and BLM guidance are shown in Appendix F3. Water quality restoration plans would be developed for the watersheds with water quality limited stream segments. The State schedule would complete the Warner Valley Subbasin total maximum daily load in 2003, and the Summer Lake, Lake Abert, and Guano Subbasins in 2007. The water quality restoration plans would be done proactively and could be submitted to the State before the work is completed.

Management Direction by Alternative

Alternative A

Management activities and uses would continue on public land. Uses and activities which address water resource-related objectives identified in existing planning documents, such as objectives relating to control of erosion and sedimentation, would be emphasized. Uses and activities would be managed to meet water quality standards on streams with water quality limited segments identified by the State of Oregon.

Implementation of existing water resource objectives and maintenance or improvement of existing water quality would continue. Streams and waterbodies not meeting minimum State water quality standard or

riparian proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian or wetland vegetation and desired physical characteristics of the stream channel and soils.

Uses and activities in these stream channels and riparian or wetland areas would be adjusted if current management would not allow for the maintenance or attainment of water quality standards and proper functioning condition.

Alternative B

Water resources would be managed for uses and activities that emphasize commodity production, while providing for the attainment and maintenance of water quality standards, proper functioning condition, and desired range of conditions. Public uses and activities would be allowed along streams and around other waterbodies, as long as there is progress toward attainment of State water quality standards.

For streams with water quality limited segments (impaired waters) as defined by 303 (d) of the CWA, management activities would be implemented to restore water quality to minimum levels that meet State water quality standards. For water quality limited segments, commodity production uses and activities would be permitted along streams and riparian and wetland areas only if they would allow progress toward attainment of water quality standards.

Streams and waterbodies not meeting minimum State water quality standards and/or proper functioning condition would be managed to attain an upward trend in condition of key riparian and wetland vegetation and desired physical characteristics of the stream channel and soils. This alternative focuses specifically on the protection and maintenance of the area along and in stream channels and within riparian conservation areas and allows those commodity uses and activities in the remaining watershed to occur. Any use or activity within the riparian conservation area that would adversely affect water quality and/or riparian or wetland resources would be excluded from the riparian conservation area. Implementation would be in the form of buffered exclusion areas or the use of temporary and permanent fencing.

Alternative C

Water resources would be managed for uses and activities that emphasize restoration, protection, or improvement of natural values and deemphasize commodity production. This alternative would provide for the attainment and maintenance of water quality standards, proper functioning condition, and desired range of conditions of the water resources. Active restoration, such as intensive woody riparian vegetation plantings and the installation of checkdams or rockbarbs, would be used in areas unable to attain proper functioning condition and the desired range of conditions through changes in management.

Public uses would be allowed along streams and around other waterbodies, as long as State water quality standards are either attained at the same or greater rate than if the use or activity were absent. For streams with water quality limited segments, uses and activities would be allowed in the watershed only if they would promote or have no effect on restoring water quality to State water quality standards. Public uses would be allowed along streams and around other waterbodies, as long as State water quality standards are either attained at the same or greater rate than if the use or activity were absent. Management would be adjusted as needed for those uses and activities that are not leading to the attainment of State water quality standards. Management activities and uses within the watershed that adversely affect infiltration rates, soil moisture storage, or safe release of water would be adjusted, restricted, or limited if desired vegetation and soil conditions cannot be attained or maintained. Streams and waterbodies not meeting minimum State water quality standards and or proper functioning condition would be managed to attain an upward trend in condition of key riparian and wetlands vegetation and desired physical characteristics of the stream channel and soils. Uses and activities within the riparian conservation area and contributing upland watershed areas that adversely affect water quality and or lead to channel or riparian or wetland resource degradation would be adjusted, restricted or limited if water quality and proper functioning condition cannot be attained or maintained with existing management.

Management options would focus on uses and activities which allow for the protection, maintenance, and restoration of riparian conservation areas and upland watersheds and measurable progress toward the attainment of water quality standards and proper functioning condition within streams and riparian conservation areas.

Alternative D

Water resources would be managed for uses and

activities that emphasize maintenance or improvement of natural values while providing for commodity production. This alternative would provide for the attainment and maintenance of water quality standards, proper functioning condition, and desired range of conditions of the water resources. Public uses and activities would be allowed along streams and other waterbodies and associated watersheds, as long as there is measurable progress toward attainment of State water quality standards. For steams with water quality limited segments, management activities would be implemented with the intent to restore water quality to the minimum level.

Streams and waterbodies not meeting minimum State water quality standards and/or proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian and wetland vegetation and desired physical characteristics of the stream channel and soils. Uses and activities within the riparian conservation area and contributing upland watershed areas that adversely affect water quality and or lead to channel or riparian or wetland resource degradation would be adjusted, restricted, or limited if water quality and proper functioning condition cannot be attained or maintained with existing management.

Management within streams and riparian conservation areas would focus on uses and activities which allow for the protection and maintenance of riparian conservation areas and upland watersheds, and measurable progress toward the attainment of water quality standards and proper functioning condition.

Alternative E

Commodity production would be excluded from all public lands. For streams with water quality limited segments, uses and activities would be allowed in the watershed only if they would promote or have no effect on restoring water quality to required State water quality standards while protecting and enhancing natural values.

Streams and water bodies not meeting minimum State water quality standards and/or proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian and wetland vegetation and desired physical characteristics of the stream channel and soils. Noncommodity uses and activities within the riparian conservation area and contributing uplands watershed areas that adversely affect water quality and/or lead to stream channel or riparian or wetland resource degradation would be adjusted, restricted, or limited if water quality and proper functioning condition cannot be attained or maintained with existing management.

Fish and Aquatic Habitat

Management Goal—*Restore, maintain, or improve habitat to provide for diverse and self-sustaining communities of wildlife, fishes, and other aquatic organisms.*

Rationale

FLPMA, six Executive orders, numerous legislative acts, and other regulations and policies direct the BLM to manage public land to provide habitat for fish and wildlife and to protect the quality of water resources. The following are examples:

FLPMA places fish and wildlife management on equal footing with other traditional land uses; requires that part of grazing fees be spent for “range betterment,” including aquatic and terrestrial wildlife habitat enhancement, protection, and maintenance where livestock range; and requires consideration of fish and wildlife resources before approval of land exchanges.

The “Sikes Act” of 1974 is a congressional mandate for the BLM to “plan, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game.”

In addition, Executive orders for floodplain management and protection of wetlands provide further direction for protection and management of fisheries habitat.

Through a statewide memorandum of understanding between the BLM and ODEQ, the BLM implements the CWA by meeting State water quality standards. Hydrologic basins covered by this Draft RMP/EIS “shall be managed to protect the recognized beneficial uses,” which include “salmonid fish (trout) rearing ,” “salmonid fish spawning,” and “resident fish and aquatic life.”

The BLM’s role in the management of fish and other aquatic resources is to provide the habitat that supports desired aquatic plants and animals. Plants, animals, and their interactions with each other and the physical environment are part of the ecological processes important for the health and function of aquatic ecosys-

tems as well as the overall rangeland or forest ecosystem. Species manipulations, such as introductions or removals, are under the authority of ODFW.

Proper functioning condition (see Plant Communities, Riparian/Wetland Vegetation section of this chapter) alone may not meet certain desired range of conditions known to be important for wildlife. For example, quaking aspen-dependent bird species may require a minimum stand size before they can become self-sustaining as a breeding population. The grazing system necessary to reach this goal may require specific periods of rest or other measures which would exceed that necessary to attain proper functioning condition.

Monitoring

Monitoring aquatic habitats would include aquatic habitat surveys, fish population surveys, macroinvertebrate sampling, water quality assessments, riparian trend analyses, Rosgen channel monitoring, riparian site classification and assessment of change over time, and assessments of riparian proper functioning condition.

Methods for measuring habitat goals, such as aerial imagery, photo points at key areas, vegetation sampling methodologies capable of describing age classes and structural conditions, and habitat utilization studies would be determined on a case-by-case basis in BLM activity and project plans. Habitat conditions currently being measured for evaluation may continue to be used.

Monitoring can be broken into two major categories. First is implementation monitoring designed to assess if designated management is being followed. An example of implementation monitoring is: livestock grazing compliance to assure seasons, stocking rates, and utilization levels are being met. The second category is effectiveness monitoring which determines if habitat conditions are moving towards a defined goal. There are numerous examples of effectiveness monitoring. To determine improvement in conditions relating to lotic proper functioning condition, monitoring methods are described for all assessment categories (Technical Reference 1737-15). Table 3-2 shows goals and possible monitoring methods to determine progress toward meeting those goals; this table does not repeat the monitoring described in the proper functioning condition technical reference listed above.

Management Direction by Alternative

Alternative A

Current management objectives for wildlife and fish and other aquatic resources would be followed. Management emphasis would be on improving and expanding existing fisheries habitat in streams and reservoirs, especially for redband trout, Warner sucker, and other native fish, and the Columbia spotted frog. Existing riparian exclosures and pastures would be maintained or improved. Strategies identified in previous planning documents for fish habitat restoration and improvement (e.g., grazing reductions, new reservoir construction, riparian fencing, instream structures, etc.) would be implemented. Cooperation would continue with ODFW on trout stocking in isolated reservoirs.

Alternative B

Management would emphasize habitat for fish and other aquatic organisms important to commodity uses, such as recreational fishing, but not at the risk of causing extinction of native species. This includes stocking of additional sites with trout in cooperation with ODFW.

Management would protect, maintain, or restore instream processes, habitat diversity, and riparian condition to sustain aquatic organisms important for commodity use. In addition, management would maintain a distribution of native game and nongame species that would promote natural dispersal and recolonization among populations.

Although management of entire watersheds is considered important for the health and function of aquatic ecosystems, this alternative would focus specifically on the protection of riparian/wetland areas where land uses or activities could have the most direct and immediate effect on aquatic habitat. Uses or activities allowed in riparian/wetland areas must ensure progress toward (1) maintenance, protection, or restoration of instream processes and habitat diversity; (2) water quality that meets State standards for aquatic beneficial use; and (3) attainment of proper functioning condition and riparian management objectives.

Where habitat conditions are determined to be lacking and the goal cannot be reached with management, instream improvements may be initiated.

Table 3-2.—*Monitoring method by Fish and Aquatic habitat objective*

Objective	Monitoring method
Decrease water temperature	■Thermograph records
Reduce sediment loads, improve spawning gravel	■Macroinvertebrate and substrate core sampling ■Wolmen pebble counts
Improve pool quality and quantity	■ARIMS stream survey ■Rosgen Level 3
Improve vegetative cover	■Greenline sampling ■Solar pathfinder ■Densiometer ■Riparian score cards
Improve bank cover	■Stream cross section and longitudinal profile
Incorporate large wood to potential	■ARIMS stream survey ■Riparian score cards

Alternative C

Management emphasis provides wildlife and fish and other aquatic organism habitat that maintains the distribution of native species among subwatersheds and supports all native species needed for self-sustaining aquatic communities.

Management would protect, maintain, or restore riparian condition, instream processes, and habitat diversity so that all native aquatic species can persist in natural assemblages within their present or historic subwatersheds. Where nonnative species already occur, habitat objectives would be based on the requirements of the native species. The purpose would be to maintain a distribution of native species that would promote natural dispersal and recolonization among populations and allow species interactions that are part of ecosystem processes.

Because management throughout a watershed is vital for the health and function of aquatic ecosystems, this alternative focuses on entire watersheds where uses or activities may have direct or indirect effects on riparian/wetland areas. Uses or activities would be allowed in the watershed as long as they promote (1) maintenance, protection, or restoration of instream processes and habitat diversity; (2) water quality that meets State standards for aquatic beneficial use; and (3) attainment of proper functioning condition and riparian management objectives.

Where habitat conditions are determined to be lacking and the goal cannot be reached with management, instream improvements may be initiated, such as installing instream structures to modify stream flow, and planting vegetation, etc. Roads would be removed from riparian conservation areas.

Alternative D

Management emphasis provides habitat for wildlife and fish and other aquatic organisms to maintain the distribution of native species among subwatersheds while providing opportunities for commodity uses. Nonnative species would receive less emphasis and would be supported only where they do not interfere with native species. Habitat would also be provided for the native species needed for self-sustaining aquatic communities.

Management would protect, maintain, or restore riparian condition, instream processes, and habitat diversity so that all native aquatic species can live in predominantly natural assemblages within their present or historic subwatersheds. Where nonnative species already occur, habitat objectives would be based on the requirements of the native species. The purpose is to maintain a distribution of native species that would promote natural dispersal and recolonization among populations and allow species interactions that are part of ecosystem processes.

Because management throughout a watershed is considered important for the health and function of aquatic ecosystems, this alternative focuses on entire watersheds where uses or activities may have direct or indirect effects on riparian/wetland areas. Uses or activities would be allowed in the watershed as long as they ensure progress toward (1) maintenance, protection, or restoration of instream processes and habitat diversity; (2) water quality that meets State standards for aquatic beneficial use; and (3) attainment of proper functioning condition, desired range of conditions, and riparian management objectives.

Livestock grazing and related activities would be removed from those stream segments where proper functioning condition assessment ratings are functioning-at-risk with no apparent trend, downward trend, or nonfunctioning and where grazing is determined to be a factor in the current condition. This is especially critical in the BLM riparian sites in fenced Federal range allotments. Exclusion of livestock would continue in these areas until systems are determined able to support reintroduction of grazing with proper management to improve riparian conditions.

Where habitat conditions are determined to be lacking and the goal cannot be reached with management, instream improvements may be initiated, such as installing instream structures to modify stream flow, and planting vegetation, etc.

Roads would be managed in riparian conservation areas to improve conditions. Roads may be removed and/or relocated where it is determined that they are contributing to less than desirable conditions. Road construction and maintenance would follow BMP's to minimize sediment input and channel effects.

Acquisition of habitat or water rights with willing owners would be pursued. Water rights would be converted to instream or habitat rights.

Alternative E

Commodity production would be excluded from all public lands. Aquatic habitat conditions would be determined primarily by natural processes. However, where needed, management would protect, maintain, or restore riparian condition, instream processes, and habitat diversity so that all native aquatic species can persist in natural assemblages within their present or historic subwatersheds. Streams and water bodies not meeting minimum State water quality standards and/or proper functioning condition would be managed to attain an upward trend in the composition and structure of key riparian/wetland vegetation and desired physical characteristics of the stream channel. Noncommodity uses and activities within the riparian conservation area and contributing upland watershed areas that adversely affect water quality and/or lead to stream channel or riparian/wetland habitat degradation would be adjusted, restricted, or eliminated.

Wildlife and Wildlife Habitat

Management Goal 1—*Facilitate the maintenance, restoration, and enhancement of bighorn sheep populations and habitat on public land. Pursue management in accordance with Oregon Department of Fish and Wildlife (ODFW) "Oregon's Bighorn Sheep Management Plan" in a manner consistent with the principles of multiple use management.*

Rationale

Section 102.8 of FLPMA states that it is policy of the United States to manage the public land in a manner that would protect the quality of multiple resources and would provide food and habitat for fish, wildlife, and domestic animals.

Public land supplies a high percentage of the total available and currently unoccupied land suitable for bighorn sheep. As the principle land-administrator of habitat capable of supporting bighorn sheep, BLM involvement in this program is necessary. BLM has a policy and responsibility to cooperate with State agencies to accommodate species management goals to the extent they are consistent with the principles of multiple use management.

ODFW has been pursuing a statewide effort to restore bighorn sheep into suitable unoccupied habitat and enhance populations in currently occupied areas. Both the BLM and the ODFW have agency management plans and have coordinated over the years to foster communication between agencies and with the public. Although the ODFW has been successfully releasing and managing bighorn sheep on public land since the mid-1960s, current populations and distributions are still considered to be below their potential.

Bighorn sheep are native to eastern Oregon and their presence contributes to the overall biological diversity and productivity of public land. There is widespread public interest in being able to observe them in their natural setting, and they are highly prized as a big game animal.

Monitoring

Monitoring would include ODFW survey data on the general locations and numbers of bighorn sheep, and livestock utilization and rangeland trend studies.

Management Direction by Alternative

Alternative A

Bighorn sheep maintenance, restoration, and enhancement would be emphasized within existing use areas and proposed reintroduction areas as identified in current land use plans, wildlife habitat management plans, and ODFW's most current bighorn sheep management plan. Bighorn sheep pioneering outside of the range would only be allowed where there are no disease transmission conflicts.

A 9-mile buffer, as recommended in "Mountain Sheep Ecosystem Management Strategy in the 11 Western States and Alaska" (USDI-BLM 1995), would be required between new domestic sheep and goat permitted use areas and bighorn sheep use areas, based on local conditions, as a mechanism to further avoid disease transmission.

Alternative B

Same as for Alternative A, except restoration of bighorn sheep forage production and reduction of juniper encroachment would occur on 6,000 to 12,000 acres of bighorn sheep range on Lynch Rim (Fish Creek Rim) (see Map V-2). Treatments would reduce invasive western juniper by 30 to 70 percent within each of these areas over the life of the plan. Any treatments occurring within the WSA would be consistent with BLM's wilderness IMP.

Alternative C

Same as for Alternative A, except domestic sheep grazing would not be allowed within the LRA and restoration of bighorn sheep forage production and reduction of western juniper encroachment would occur on 12,000 to 25,500 acres of bighorn sheep range on Lynch Rim (Fish Creek Rim), South Warner Rim, Coleman Rim, and South Abert Rim (see Map V-2). Treatments would reduce invasive western juniper by 30 to 70 percent within each of these areas over the life of the plan. Any treatments occurring within the WSA would be consistent with BLM's wilderness IMP.

Alternative D

Same as for Alternative A, except restoration of bighorn sheep forage production and reduction of western juniper encroachment would occur on 12,000 to 25,500 acres of bighorn sheep range on Lynch Rim (Fish Creek Rim), South Warner Rim, Coleman Rim, and South Abert Rim (see Map V-2). Treatments would reduce invasive western juniper by 30 to 70 percent within each of these areas over the life of the plan. Any treatments occurring within the WSA would be consistent with BLM's wilderness IMP.

Alternative E

Bighorn sheep management would allow for natural processes to occur. Habitat maintenance, restoration, and enhancement would be emphasized within all suitable range and with no limitations on public land. Bighorn sheep occupancy would be determined by population growth and natural dispersal. Livestock grazing, including domestic sheep and goats, would not be authorized; therefore, a buffer would not be required to minimize disease transmission.

Management Goal 2—*Manage big sagebrush cover to meet the life history requirements of sagebrush-dependent wildlife.*

Rationale

Section 102.8 of FLPMA requires that public land be managed to protect the quality of multiple resources and provide food and habitat for fish, wildlife, and domestic animals. Rangeland health regulations identify the need to foster productive and diverse populations and communities of plants and animals.

Numerous wildlife species depend on native upland sagebrush steppe habitats to meet life history needs. In managing uplands, the BLM needs to consider the consequences and relationships of management to the life history needs of wildlife.

Alternative A

Variable desired conditions of big sagebrush cover would be determined on a case-by-case basis in cooperation with ODFW to provide mosaics of sagebrush cover on portions of big game habitat. Limited emphasis would be placed on specifically providing habitat for nongame wildlife species. Crucial big game and greater sage-grouse habitat would be protected from large-scale vegetation treatment projects or wildland fires.

Alternative B

Big sagebrush habitat would be reestablished on native rangeland or seedings where economically important wildlife are present.

Alternative C

Big sagebrush habitat would be managed for shrub cover, structure, and forage values for the benefit of game and nongame wildlife. The desired range of conditions would include shrub cover values that meet or exceed the requirements described in "Wildlife Habitats in Managed Rangelands" (1984) and big sagebrush distribution over a large enough area to avoid the adverse impacts of habitat fragmentation. The desired range of conditions would strive for big sagebrush overstories that emphasize the presence of mature, light- to moderately-stocked shrub canopies capable of supporting diverse herbaceous understories and that are present in a variety of spatial arrangements important to wildlife. This would apply to all native range or seeded areas in big sagebrush habitats throughout the planning area.

Alternative D

Same as for Alternative C, except that desired range of conditions would apply to all areas in big sagebrush habitats throughout the planning area.

Alternative E

Future big sagebrush conditions would be variable and would be determined exclusively by natural processes.

Management Goal 3—*Manage upland habitats so that the forage, water, cover, structure, and security necessary for wildlife are available on public land.*

Rationale

Section 102.8 of FLPMA states that it is the policy of the United States to manage public land in a manner that would protect the quality of multiple resources and provide food and habitat for fish, wildlife, and domestic animals. The PRIA directs BLM to improve rangeland conditions with due consideration given the needs of wildlife and their habitats.

The character of upland vegetation (arrangements, densities, and age classes, etc.) greatly influences wildlife habitat quality and productivity. Because the character of upland vegetation can vary in response to Federal land use authorizations, BLM needs to consider the consequences of various land uses (such as grazing and mining) and treatments (such as forest health projects, burning, and seeding) to the health of wildlife habitat. The outcomes of what may be considered proper range or forest management may not necessarily result in satisfactory wildlife habitat.

Wildlife must have a reasonable amount of protection from the adverse impacts associated with human disturbances. This is especially true during breeding periods and on winter ranges, and can apply to most kinds of human activities.

Monitoring

Monitoring includes periodic estimations or actual measured values of vegetation. Monitoring would normally be in concert with resource evaluations of various geographic areas. Monitoring would determine how closely watersheds or project areas are to meeting desired wildlife habitat conditions.

Management Direction by Alternative

Alternative A

Single-species-oriented management is emphasized in most habitats.

Improvement of crucial big game habitat on approximately 3.2 million acres as identified in the Fort Rock/Silver Lake, Paisley, North and South Warner Lakes Habitat Management Plans would continue (*note:* total includes overlapping habitat for elk, pronghorn, mule deer, and bighorn sheep [see Map W-2]). Upland big game habitat within the resource area is currently managed to attain desired wildlife habitat conditions over the long term. Achievement of desired wildlife habitat conditions would include a variety of methods to increase or decrease the big sagebrush overstory.

The present public land base within crucial big game ranges would be retained in Federal ownership, unless an exchange could be made that would be more beneficial to wildlife. Any proposed changes would be reviewed by ODFW.

Ten to 15 wildlife water developments (2,000–3,000-gallon guzzlers) would be installed where wildlife water is deficient.

Forest, western juniper, quaking aspen, and mountain shrub habitat types would be managed as described

under the Shrub Steppe and Forest and Woodlands sections of this document.

The Cabin Lake Mule Deer Winter Range Cooperative Road Closure with USFS and ODFW would continue. Vehicle use in the 66,460-acre area would be limited to designated roads and trails from December 1 to March 31. New closures would be initiated where necessary.

Alternative B

Same as for Alternative A

Alternative C

Same as for Alternative A, except that equal emphasis would be placed on game and nongame wildlife habitat needs in sagebrush steppe, forest and woodland habitats. To the extent possible and practical, wildlife community connectivity and interrelationships would be emphasized in most habitats. This approach would stress landscape or ecosystem management and be distinctly different from single-species management emphasis.

In crucial wildlife habitat such as deer winter range and greater sage-grouse ranges (Maps W-1 and -2), new rights-of-way would be avoided and OHV's would be limited to existing roads and trails (Maps L-7 and R-6). The Cabin Lake Mule Deer Winter Range Cooperative Road Closure area would be expanded by 34,374 to 100,834 acres. Vehicle use would be limited to designated roads and trails in this area from December 1 to March 31.

Alternative D

Same as for Alternative C, except new rights-of-way would be avoided in greater sage-grouse breeding habitat and crucial deer winter range (Map L-8), and vehicles would be limited to existing roads and trails or seasonal closures in deer winter range. A total of 275,463 acres in north Lake County would be designated OHV's limited to existing roads and trails year-round to protect wildlife habitat (see Map R-7).

Alternative E

This alternative assumes that habitat conditions would be determined by the consequences of natural events.

Management Goal 4—*Manage forage production to support wildlife population levels identified by the Oregon Department of Fish and Wildlife (ODFW).*

Rationale

Section 102.8 of FLPMA states that it is the policy of the United States to manage public land in a manner that would protect the quality of multiple resources and provide food and habitat for fish, wildlife, and domestic animals. The PRIA directs BLM to improve rangeland conditions with due consideration given the needs of wildlife and their habitats.

The ODFW manages wildlife species populations through management objectives set up in their respective management plans and the BLM manages adequate habitat to support these numbers.

Since the original wildlife allocations set up over 20 years ago, big game populations have expanded their range and increased in numbers. Bighorn sheep and elk have been reintroduced into the planning area and pronghorn and deer numbers have been allowed to expand due to habitat changes and ODFW harvest management.

Alternative A

Continue current allocation of 13,691 animal unit months (AUM's) for wildlife needs. Livestock grazing use within crucial deer or pronghorn winter range would not be allowed to exceed an average of 30 percent of the current year's growth of bitterbrush.

Alternatives B–D

Allocate approximately 22,081 AUM's of forage to wildlife to provide for expanding elk and bighorn sheep populations and readjust AUM's in crucial deer and pronghorn allotments to reflect ODFW management number changes. This is an increase of 8,390 AUM's over current allocation, and would have no affect on livestock allocations. Current and proposed wildlife forage allocations by allotment and wildlife species are shown in Chapter 2, Table 2-26, and Appendix E1, Allotment Management Summaries.

Livestock grazing use within crucial deer or pronghorn winter range would not be allowed to exceed an average of 30 percent of the current year's growth of bitterbrush.

Alternative E

No special management adjustments would be required; however, site-specific projects may need to be

implemented to provide adequate forage for wildlife.

Special Status Animal Species

Management Goal—*Manage public land to maintain, restore, or enhance populations and habitats of special status animal species. Priority for the application of management actions would be: (1) Federal endangered species, (2) Federal threatened species, (3) Federal proposed species, (4) Federal candidate species, (5) State listed species, (6) BLM sensitive species, (7) BLM assessment species, and (8) BLM tracking species. Manage in order to conserve or lead to the recovery of threatened or endangered (T&E) species.*

Rationale

Section 102.8 of FLPMA requires that public land be managed to protect the quality of multiple resources and to provide food and habitat for fish, wildlife, and domestic animals.

The "Endangered Species Act" mandates management that leads to the conservation or recovery of federally listed threatened or endangered species. This Act, as well as BLM policy, encourages management to protect special status species not currently listed as threatened or endangered.

Most fish and wildlife assigned to a special status category are limited in their distributions, populations, or habitats and may be at risk over various geographic areas. Where evidence suggests land uses are adversely affecting special status species not currently listed as threatened or endangered, it is in the public interest to prevent the need for Federal listing under the "Endangered Species Act." Listing of a species as threatened or endangered may lead to restrictions on land uses, and under some circumstances may cause adverse socioeconomic impacts to commodity users. In most cases, there are both socioeconomic and biological benefits associated with conserving species to avoid Federal listing.

Maintenance, restoration, or enhancement of populations or habitat, as defined in the glossary of this document, may represent appropriate BLM management depending on the habitat needs or specific circumstances of a species. Restoration or enhancement may not always be the only clear choice for BLM action regarding special status species. One potential limitation that could delay restoration or enhancement is that the biological mechanisms adversely affecting a species may not be well enough understood to identify needed management. Maintenance may also be a preferred course of action where resource conditions are exceptional.

Monitoring

Periodic surveys would determine the distribution, resource conditions, and trends of important habitats that support special status species. Refer to the monitoring sections of the Wildlife and Wildlife Habitat and Water Resources/Watershed Health sections in this chapter for more on monitoring.

Management Common to all Alternatives

With the exception of Alternative E, management of Warner sucker, Foskett speckled dace, Hutton tui chub, bald eagle, and peregrine falcon would be in accordance with recovery plans and consultation with the USFWS. Management of greater sage-grouse would be in accordance with current BLM management strategies as outlined in the "Greater Sage-grouse and Sagebrush-Steppe Ecosystems Management Guidelines" (2000). The BLM is currently part of a working group developing a long-term conservation strategy plan for Oregon and Washington which would be completed in the next 12–18 months. All BLM actions in "The Recovery Plan for the Threatened and Rare Native Fishes of the Warner Basin and Alkali Subbasin" (1998) would be implemented (see Appendix H). Special status species management actions would be adjucted to accommodate additions or deletions in official listings of special status species.

Management Direction by Alternatives

Alternative A

Management would emphasize achieving desired range of conditions that maintain, enhance, or restore habitats or populations of any special status species regardless of economic importance. All special status species habitats or populations would be managed so that BLM actions do not contribute toward the need to list these species as federally T&E.

Management would provide habitat conditions that meet individual species requirements. Fish and wildlife community goals would generally be secondary to goals for individual species.

A variety of projects or other land use adjustments

might be required to manage for special status species. Some management for maintenance could require avoidance or mitigation measures. Some restoration or enhancement measures could involve very specific remedies with the potential to lead to substantial adjustments in customary land use practices. Because of the variability in habitat use by special status species, management actions could be required within any of the habitat types described in this plan.

Alternative B

Management would emphasize achieving desired range of conditions that maintain, enhance, or restore habitats and populations of economically important special status species listed in Table 2-24. All other special status species habitats or populations would be managed so that BLM actions do not contribute toward the need to list these species as federally threatened or endangered. Management for these other species would emphasize maintenance rather than restoration and enhancement.

Management would provide habitat conditions that favor individual special status species. Fish and wildlife community goals would be secondary to goals for individual species.

Management that might be required for special status species could include avoidance or mitigation measures. Some restoration or enhancement measures could involve very specific remedies leading to substantial adjustments in customary land use practices. Because of the variability in habitat use by special status species, management actions could be required within any of the habitat types described in this plan.

Alternative C

This alternative would include the most aggressively proactive measures for special status species management. Habitats and populations would be restored or enhanced in all areas where biologically sound and reasonable. Maintenance would only be considered where habitat or population conditions are considered to be at or near their potential. This is in contrast to Alternatives A and B, which would include measures for maintenance regardless of habitat or population quality.

Management would develop habitats that support healthy, biologically diverse communities of wildlife at the fine scale while meeting special status species needs. Individual species requirements would be included in management prescriptions, but not to an extent that overemphasizes the value of any one habitat type. This community approach to management is different from the single-species-driven management indicated in Alternatives A and B.

A variety of projects or other land use adjustments could be required to manage for special status species. Some management for maintenance could require avoidance or mitigation measures. Restoration or enhancement measures could involve remedies that lead to substantial adjustments in customary land use practices. Because of the variability in habitat use by special status species, management actions could be required within any of the habitat types described in this plan.

Alternative D

Management would emphasize achieving desired range of conditions that maintain, enhance, or restore habitats or populations of special status species regardless of their economic status. All special status species habitats or populations would be managed so that BLM actions would not contribute toward the need to list the species as federally T&E.

Management would be oriented toward the development of habitats that support healthy, biologically diverse communities of wildlife at mid and fine scales while meeting special status species needs. Individual species requirements would be included in management prescriptions, but not to an extent that overemphasizes that value of any one habitat type. This community approach to management is different from the single-species-driven management indicated in Alternatives A and B.

A variety of projects or other land use adjustments could be required to manage for special status species. Some management for maintenance could require avoidance or mitigation measures. Some restoration or enhancement measures could involve very specific remedies leading to substantial adjustments in customary land use practices. Because of the variability in habitat use by special status species, management actions could be required within any of the habitat types described in this plan.

Alternative E

Only those actions legally required to manage and protect federally listed species would be carried out. Management for other special status species would be

minimal. Natural processes would primarily determine future conditions for special status species.

Livestock Grazing Management

Management Goal—*Provide for a sustainable level of livestock grazing consistent with other resource objectives and public land-use allocations.*

Rationale

The "Taylor Grazing Act" of 1934 is the legislative authority providing for livestock grazing on and protection of public land. FLPMA, PRIA, and other acts, direct the management of public land for multiple use and sustained yield. Rangeland management strategies would provide for the maintenance or restoration of watershed function, nutrient cycling and energy flow, water quality, habitat for special status species, and habitat quality for populations and communities of native plants and animals. These management strategies have been supported by development of regional "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington" (USDI-BLM 1997). The five standards are described in the Rangeland Management section of Chapter 2 and in Appendix E4.

Monitoring

Monitoring of livestock grazing would include recording actual use, measurements of utilization, and continuation of collection of ecological site inventory data. As of the end of fiscal year 2000, rangeland health assessment's have been completed on 12 allotments covering 801,654 acres, and would be completed for all remaining allotments by 2008. Monitoring data would be utilized to determine attainment of the five standards. Conditions and trends of resources affected by livestock grazing would be monitored to support periodic analysis/evaluation and site-specific adjustments of livestock management actions. Monitoring would determined when grazing would be authorized in burned areas or prescribed burn treatments based on attainment of resource objectives.

Management Common to Alternatives A–D

Where livestock grazing is found to be limiting achievement of multiple use objectives, actions to control intensity, duration, and timing of grazing and/or provide for periodic deferment and/or rest 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 contributing to the nonattainment of resource objectives, appropriate actions would be implemented. The intent of grazing management is to leave sufficient herbaceous material in most areas to provide soil and watershed protection, to provide forage and cover for wildlife and wild horses, and to meet other resource objectives. Known problems pertaining to livestock grazing are not related to existing forage allocations, but needed changes in management such as season of use. This is addressed in each of the alternatives. A summary of grazing treatments is presented in Appendix E1, Allotment Management Summaries.

The current grazing levels (Appendix E1, Allotment Management Summaries) would be maintained until analysis or evaluation of monitoring data or rangeland health assessments identify a need for adjustments to meet objectives. Applicable activity plans (including existing allotment management plans, agreements, decisions and/or terms and conditions of grazing use authorizations) would be revised and implemented to ensure that resource objectives are being met. The level of AUM's of specified grazing use in the alternatives is based on the average authorized AUM's in the resource area from 1991 to 2000 at light to moderate levels. However, livestock permittees have the option to license up to their full active preference for any given year. Total active preference for the resource area is 164,128 AUM's. Permittees seldom use their full active preference for a variety of reasons, including previous agreements with BLM, management prescriptions in implemented allotment management plans, economic factors, and forage and water availability.

Areas burned by wildland fire or prescribed fire would be rested a minimum of two growing seasons before they are reopened to livestock grazing. Decisions to resume livestock grazing would be based on monitoring data. Rest for less than two growing seasons may be justified case-by-case based on sound resource data and experience.

Within the LRA, the Shale Rock Allotment (#435), South Pasture, would be left unallotted to a specific livestock operator and use would be authorized on an emergency basis only.

In areas where livestock grazing is presently not compatible with other uses, no grazing would be permitted. Public land which is found not to be

suitable for livestock grazing or containing resource values which cannot be adequately protected from livestock impacts through mitigating measures is not allocated to livestock grazing. Table 2-28 and Map G-1 show areas that are currently not allotted to livestock grazing due to conflicts with other uses.

Further, livestock grazing would be managed during and following drought to maintain soil and vegetation health and productivity following procedures outlined in Appendix E1.

Management Direction by Alternative

Alternative A

Continue the authorization of an average of 108,234 AUM's per year of specified grazing use consistent with multiple use and sustained yield objectives identified in existing land use plans to resolve identified conflicts/concerns.

Adjustments to terms and conditions of livestock grazing authorizations, based on monitoring and periodic evaluation of allotments, would be implemented to progress toward meeting objectives of existing land use plans. Administrative solutions, including reductions in levels of authorized livestock, changes in season of use, installation of range improvement projects, would be considered as necessary to meet management objectives.

Forage utilization would not exceed moderate (50 percent).

Rangeland improvement projects would be implemented to minimize unacceptable livestock grazing impacts by accessing available but underutilized forage and improving livestock distribution. Vegetative treatments would be implemented as identified in the vegetative management alternatives of this document. Standard implementation procedures for construction of rangeland improvements are presented in Appendix D.

Existing range improvements that support livestock grazing use would be maintained. Projects which do not function to meet management framework plan and rangeland program summary objectives would be abandoned and sites rehabilitated. Currently, about 106,416 acres are unalloted and another 136,766 acres are excluded from grazing for various reasons.

Additional forage produced on a temporary basis would be made available to qualified applicants through temporary nonrenewable grazing authorization, when consistent with existing management framework plan and rangeland program summary objectives.

Implement enforcement of unauthorized use.

Alternative B

Emphasize livestock grazing on public land suitable for grazing. Authorize an average of 119,057 AUM's per year of specified grazing use for livestock forage consistent with multiple use and sustained yield objectives identified in existing land use plans.

Adjustments to terms and conditions of livestock grazing authorizations, based on monitoring and period evaluation of allotments, would be implemented to progress toward meeting objectives of existing land use plans. Administrative solutions, including reductions in levels of authorized livestock, changes in season of use, installation of range improvement projects, would be considered as necessary to meet management objectives. The priority, on a case-by-case basis, would be to maintain or enhance authorized use levels for livestock.

Forage utilization would not exceed moderate (60 percent).

Rangeland improvement projects would be implemented to minimize unacceptable livestock grazing impacts by accessing available but underutilized forage and improving livestock distribution. Temporary or permanent range improvements would be constructed to protect resource values while retaining optimum quantity of forage resources available for livestock (see Table E3-1 for proposed projects by allotment).

Vegetative treatments would be implemented as identified in the vegetative management alternatives of this document. Standard implementation procedures for construction of rangeland improvements would follow BLM Manual Handbook H-1741-1 and -2, and USDI-BLM and USDA-FS (1988).

Existing range improvements that support livestock grazing use would be maintained. Projects which do not function to meet management framework plan and rangeland program summary objectives would be abandoned and sites rehabilitated. Areas where grazing would be unalloted or excluded would be similar to Alternative A.

Additional forage produced on a temporary basis would be authorized to qualified applicants through temporary nonrenewable grazing, when consistent with maintaining other resource values.

Alternative C

Emphasize protection of natural values by providing a sustained yield of an average of 86,587 AUM's per year of specified grazing use while emphasizing resource values, consistent with resource objectives.

Forage utilization would not exceed light (30 percent).

Within LRA, the Devils Garden Allotment (#907), which has been available for livestock grazing on an emergency basis only and not allotted to a specific livestock operator, would be closed to grazing. In addition, six of the proposed ACEC's and one existing ACEC, totaling 50,497 acres, would be closed to grazing to provide protection to relevant and important botanical and cultural values and to protect research natural area values. In total, 131,751 acres would be unalloted and 187,263 acres would be excluded from grazing.

Rangeland improvement projects would be implemented only to meet resource objectives. Administrative solutions (season of use revision, stocking level adjustment, and pasture exclusion) would be the preferred solution to meet resource management objectives. Range improvement projects that do not enhance resource values and meet management objectives would be abandoned and the sites rehabilitated. Vegetative treatments would be implemented only to return rangelands to proper functioning communities. Standard implementation procedures for construction of rangeland improvements would follow BLM Manual Handbook H-1741-1 and -2, and USDI-BLM and USDA-FS (1988).

Temporary nonrenewable grazing would not be authorized. Additional herbaceous production would not be allocated to livestock grazing but would be retained onsite for values other than forage production.

Alternative D

Protect and improve natural values while providing a sustained yield of an average of 108,234 AUM's per year of specified grazing use while maintaining resource values for multiple use and sustainability, consistent with resource objectives.

Forage utilization would not exceed moderate (50 percent).

Rangeland improvement projects would be implemented only to meet resource objectives. Administrative solutions (i.e., season of use revision, stocking level adjustment, and pasture exclusion) would be the preferred solution to meet resource management objectives. Range improvement projects that do not function to enhance resource values and meet management objectives would be abandoned and rehabilitated.

Vegetative treatments would be implemented only to return rangelands to proper functioning communities. Standard implementation procedures for construction of rangeland improvements would follow BLM Manual Handbook H-1741-1 and -2, and USDI-BLM and USDA-FS (1988).

Areas where grazing would be unalloted or excluded would be similar to Alternative A.

Temporary nonrenewable grazing would be authorized only if such use would not conflict with other resource management outlined in this plan.

Alternative E

Commodity production would be excluded, eliminating livestock grazing. Other uses would be limited and natural values maximized.

No grazing use would be authorized. No rangeland projects would be planned or implemented in support of livestock grazing. All projects that support livestock grazing would be abandoned and rehabilitated that do not contribute to meeting other resource management objectives. Remaining rangeland projects would be maintained to design standards necessary to meet management objectives. All cooperative agreements with livestock operators would be vacated.

Wild Horses

Management Goal—*Maintain and manage wild horse herds in established herd management areas at appropriate management levels to ensure a thriving natural ecological balance between wild horse populations, wildlife, livestock, vegetation resources, and other resource values.*

Rationale

The "Wild Free-Roaming Horse and Burro Act" of 1971 requires the BLM to protect and manage wild horses in areas where they were found at the time of the Act, in a manner designed to achieve and maintain a thriving natural ecological balance in keeping with the multiple use management concept of public lands.

Monitoring

Wild horses and their habitat would be monitored to determine the timing and implementation of gatherings, and to support existing appropriate management levels or refine and adjust appropriate management levels as needed. Monitoring would include periodic horse counts to identify age and sex composition of herds, identification of areas used by livestock and horses, gathering climate data, conducting vegetation utilization studies, and determining vegetation condition and trend.

Management Common to All Alternatives

Management of both the Paisley and Beaty Butte Herd Management Areas are guided by herd management area plans which identify specific management objectives for each herd management area. These plans would continue in force and be revised as needed to incorporate management direction contained in this RMP. Horses straying outside the herd management areas would be removed. The current memorandum of understanding with Hart Mountain Wildlife Refuge, whereby the BLM agrees to remove stray horses within the refuge boundaries, would be followed.

Horses released back into herd management areas after gathers would be animals exhibiting the special and unique characteristics of that herd as described in Table 2-32. Horses would be selected to maintain herd characteristics and to diversify genetic variability within herds, especially in the Paisley Desert Herd Management Area which has a lower appropriate management level. Research on fertility control may be implemented on a case-by-case basis as necessary to continue the research in developing a safe, effective vaccine. The fertility control vaccine (if approved for general use by the Food and Drug Administration) may be considered an option in management used to reduce the frequency of gathers and benefit the health of wild horses and rangelands.

Range improvements would be installed to encourage horses to stay within herd management area boundaries. Improvements would be consistent with other resource objectives of each alternative.

Management Common to Alternatives A–C

Herd management areas would initially be managed for the established appropriate management levels of 60–110 horses in the Paisley Desert Herd Management Area and 100–250 horses in the Beaty Butte Herd Management Area. Adjustments to appropriate management levels would be made as described in each alternative. Forage allocations would be 1,320 AUM's in Paisley Desert and 3,000 AUM's in Beaty Butte.

Management Common to Alternatives B–D

Forage for wild horses would be allocated to all horses in the herd management area regardless of age. Forage allocations for wild horses would be reduced to zero in Allotments 400 and 426 because these allotments are outside the herd management area boundaries.

The boundary in the Paisley Desert Herd Management Area would be modified. A total of 31,859 acres in the northwest corner would be maintained as an unoccupied herd area. A herd would not be reestablished or managed in the herd area. See Map SMA-2 for location of the herd area and herd management area.

Management Direction by Alternative

Alternative A

Wild horses would be allocated forage based on the maximum number of adults with and average of 80 percent adults and 20 percent foals. A total of 1,020 AUM's would be allocated in Paisley Desert Herd Management Area and 2,400 in Beaty Butte Herd Management Area as described in the "Lakeview Grazing Management Final EIS" (1982).

Established water developments used by horses would be maintained. Additional water developments, as identified in existing land use plans, would be constructed. Fencing and other structures identified in land use plans would be maintained and new ones developed.

Approximately 9,000 acres (2 percent) of the Beaty Butte Herd Management Area is recommended for prescribed burning to improve ecological condition. No burning is recommended in the Paisley Desert Herd Management Area due to risk of weeds and nonnative species such as cheatgrass invading the area.

Alternative B

When monitoring data support a downward adjustment in the allocation of forage resources within herd management areas, livestock production would be considered a higher value use of the forage, and would be emphasized on a case-by-case basis to optimize commodity production from the public land. When analysis of the monitoring data identifies a need to reduce grazing impacts, reductions in wild horse appropriate management levels would be emphasized. Increases in livestock use would be given first priority when analysis of monitoring data identifies additional forage available on a sustained-yield basis.

Established water developments used by horses would be maintained. Additional identified water developments and range improvements would be constructed. Existing fencing and other structures would be maintained and new projects developed. Boundary fencing of herd management areas would be improved to assist in managing the horses inside the herd management areas.

Alternative C

When monitoring data support a downward adjustment in the allocation of forage resources within herd management areas, proportionate decreases in wild horse appropriate management levels and authorized active use by livestock would be implemented. This would be done through the adaptive management process, based on each species' contribution to the failure to meet management objectives or failure to maintain an ecological balance. When monitoring data identify additional available forage on a sustained basis, proportionate increases between wild horse appropriate management levels and livestock authorized active use would be emphasized, as consistent with meeting other management objectives of Alternative C.

Established water developments and other projects supporting wild horse populations would be maintained, as consistent with other management objectives. Projects designed to facilitate wild horse management that do not emphasize natural values would be abandoned and sites would be rehabilitated. Construction of water developments and other projects which would minimize impacts to other resources and emphasize natural values would be considered.

Alternative D

Management under this alternative would the same as described under Alternative C, except the initial appropriate management level would be increased in the Paisley Desert Herd Management Area to 60–150 horses. This represents an increase of 40 horses at maximum appropriate management level, which is supported by monitoring data. The increase reflects extending the timeframe between gathers to 5 years, consistent with the gathering cycle in Beaty Butte. Forage allocations for Paisley Desert would be 1,800 AUM's; the Beaty Butte allocation would remain at 3,000 AUM's.

Alternative E

Initial forage allocations and appropriate management levels for wild horses would be the same as Alternative D.

Interior fencing in herd management areas would be removed. Appropriate management levels would be adjusted as the need is identified in monitoring data. Appropriate management levels would reflect a range of horse numbers in balance with available forage and resources. Horses would be gathered when appropriate management levels are exceeded or if horses stray outside the boundaries of the herd management areas. Forage allocations as such would not be made since there would be no domestic livestock grazing under this alternative. Restoration of unhealthy plant communities of the Great Basin Ecosystem found in the Paisley Desert Herd Management Area would not be done with intensive vegetation projects. Restoration would occur through natural processes over a longer period of time. Water developments would be maintained or new ones established only as needed for survival of the horses.

Special Management Areas

Areas of Critical Environmental Concern

Management Goal—*Retain existing and designate new areas of critical environmental concern (ACEC's) and research natural areas (RNA's) where relevance and importance criteria are met and special management is required to protect the identified values.*

Rationale

Section 202(c)(3) of FLPMA mandates that priority be given to the designation and protection of ACEC's. These areas are defined in section 103(a) as areas where special management attention is required to protect and prevent irreparable damage to important values, resources, systems or processes, or to protect life and safety from natural hazards. To accomplish this, the following decisions are described for each alternative:

1) Which existing areas should be retained as ACEC's and which proposed areas should be designated as ACEC's?

2) If designation is appropriate, how much area should be included in the designation?

3) If designated, what special management should be implemented to protect relevant and important values?

Appendix I contains a description of each existing and proposed ACEC including the relevant and important values of each area. The appendix also contains a map of each area showing proposed boundaries by alternative and the OHV designations and road closures, if any, proposed in each area.

Monitoring

ACEC's would be assessed on a periodic schedule in order to evaluate maintenance and enhancement of relevant and important values and to evaluate effectiveness of management in maintaining those values. Monitoring may include collection of both qualitative and quantitative data.

Common Management Actions

The following narrative describes management direction that would apply to more than one ACEC and to more than one alternative.

Summary of ACEC designation: Under Alternative A, no new ACEC's would be designated and existing ones would be retained. Under Alternative B, existing ACEC's would be retained and only one new area, Connley Hills, would be designated. Under Alternatives C and D, existing ACEC's would be retained and new ACEC's would be designated. One existing area would be expanded. The size and management direction for newly designated areas could vary under Alternatives C and D. Under Alternatives C and D, nine new RNA's would be designated within some of the ACEC's. Under Alternative E all existing ACEC designations would be revoked and no new ACEC's would be designated. Management under Alternative E for these areas would be the same as that applied across the planning area.

Research natural areas: RNA's are managed to preserve natural features and ecosystems in as natural a condition as can be found for research and educational purposes which relate to the values for which the ACEC was created; the ACEC management plan is the manner the BLM manages RNA's.

Special status and Bureau sensitive animals and plants: Avoid disturbance to nesting raptors during the nesting season (January–August, depending on species), especially Lost Forest, Lake Abert and Rim, Black Hills, Connley Hills, Fish Creek, Hawksie-Walksie, and Table Rock.

Avoid disturbances to all special status plant populations in all ACEC's where they occur. General inventories, monitoring, and research would continue for special status plants. Conservation agreements would be written for all Bureau sensitive plant species (the former Federal Candidate Category 2).

Fire management in ACEC's: Under Alternatives A, B, C, and D, in all ACEC's and RNA's, wildland fires would be managed according to appropriate management response; however, some ACEC's would be analyzed for possible wildland fire use. Use of heavy equipment in ACEC's, WSA's and RNA's would be avoided and would require line officer approval. Use of retardant would be allowed within these areas for initial attack. Retardant use during extended attack would be considered as a part of the wildland fire situation analysis, considering the resource values at risk. If used, heavy equipment would be restricted to existing roads and trails. Prescribed fires could be used in ACEC's where it can be shown to preserve the desired characteristics of the SMA and to meet management objectives.

Weed management in ACEC's: Noxious weeds would be aggressively controlled using integrated weed management methods, such as biological control, site-specific spraying, and grubbing by hand, consistent with protection and enhancement of relevant and important values. Some areas such as Lake Abert and Warner Wetlands are covered by specific weed management plans. Any weed control measures proposed in WSA's within ACEC's would be consistent with wilderness IMP direction.

Road management: In all ACEC's designated closed to OHV's, or where OHV's are limited to designated roads and trails, all roads not open and not needed for administrative access may be signed closed, physically blocked, and/or rehabilitated. Road data sources may include one or more of the following: USGS DLG and DOQ data, GPS data, and field mapping. Additional, noninventoried roads or trails may be present on the ground. Any new roads or trails discovered in the future would be considered open unless determined in a subsequent analysis that they are not needed or are causing resource damage.

WSA management in ACEC's: Management prescriptions were developed for Alternatives B, C, and D independently of WSA considerations. All management actions for those portions of ACEC's within an instant study area (ISA) or WSA would be governed by the wilderness IMP (BLM 1995b) until such time as Congress makes a determination regarding wilderness designation for the area. Any WSA's, or portions thereof, designated an ACEC and later released from wilderness study would be managed according to the applicable management direction for that ACEC. Under some alternatives, the proposed ACEC management within WSA's may be more restrictive than the wilderness IMP, such as closing an area to livestock grazing or limiting vehicle use to designated roads and trails rather than existing roads and trails.

Eight proposed or existing ACEC's overlap with existing WSA's and an ISA. Table 3-4 lists the ACEC's and WSA's involved and the acres of overlap in each case.

Nondestructive research: Nondestructive research is encouraged in all of the proposed and existing ACEC's, and is not limited only to those areas that have RNA's. Any research would need to be authorized by the BLM in writing and where necessary, permitted. It is assumed that the resultant data and information gathered would be shared with the BLM to help guide management of these areas.

Recreation: Commercial use or use requiring a special permit that occurs or is proposed within ACEC's would be evaluated on a case-by-case basis and would be permitted, modified, or prohibited as needed to protect the ACEC values.

Minerals: According to 43 CFR 3809.11, an approved plan of operation is required prior to commencing any operation, except casual use, involving locatable minerals in a designated ACEC, regardless of size of area disturbed.

Table 3-3 summarizes management for existing and proposed ACEC's/RNA's.

Management Direction by Alternative—Devils Garden ACEC

Alternative A

The existing ACEC designation and boundaries (28,241 acres) would be retained. The ACEC and WSA boundary are the same (Maps SMA-1 and -5). Access roads, such as to Derrick Cave, would be maintained as needed and as funding allowed. New rights-of-way would be excluded from the area except to access non-Federal property. Due to the WSA status, the area is managed as VRM Class I. If the area is not designated wilderness, it would be managed as VRM Class IV.

Though locatable mineral entry is allowed under the wilderness IMP, actions that require reclamation are not currently allowed. This effectively closes the area to mineral location. The area is also closed to the sale or lease of minerals. If the area is not designated wilderness, the ACEC would be open to all mineral uses. Any oil, gas, or geothermal activity would be subject to no-surface-occupancy stipulations. Locatable mineral exploration and development would be allowed under a plan of operation.

About half of the ACEC is unalloted. Three allotments are located in the other half. Livestock grazing on a temporary nonrenewable grazing basis would continue in Allotment 907. Grazing in Allotments 906 and 910 would continue as at present. Wood cutting for firewood, posts, or other uses; and gathering vegetative products, such as juniper boughs or berries or other living plant material, would be prohibited. OHV's would be limited to existing roads and trails.

Alternative B

Under this alternative, the existing Devils Garden ACEC would be retained. Management would be the same as under Alternative A, except that for rights-of-way, the area would be managed as an avoidance area rather than an exclusion area (Maps SMA-2 and -5).

Alternative C

The ACEC would be retained under this alternative (Maps SMA-3 and -5). The area would be closed to sale or lease of minerals. New rights-of-way would be excluded except to provide access to non-Federal land.

Table 3-3.—*Management summary for existing and proposed ACEC's/RNA's*

ACEC/RNA	Alternative	Acres	ROW's [1]	OHV [2]	VRM [3]	Grazing	Wood/ plant collecting [4]	Minerals [5]		
								Locatable	Leasable	Salable
Existing ACEC's										
Devils Garden ACEC	A	28,241	AV	LE	I, IV	O	O	NREC	C	C
	B	28,241	AV	LE	I, IV	O	O	NREC	C	C
	C	28,241	EX	LD	I, II	C	O	C	C	C
	D	28,241	AV	LD	I, III	O	O	NREC	C	C
	E	*No designation*								
Lake Abert ACEC	A	50,117	AV	LE	I	O	O	C, O	C, NSO	C, O
	B	50,117	AV	LE	I	O	O	C, O	C, NSO	C, O
	C	50,117	EX	LD	I	O	O	C, O	C, NSO	C, O
	D	50,117	AV	LE	I	O	O	C, O	C, NSO	C, O
	E	*No designation*								
Lost Forest/Sand Dunes/Fossil Lake ACEC										
Lost Forest RNA	A	9,047	O	LD	III	O	C	C	C	C
	B	8,883	O	LD	III	O	C	C	C	C
	C	8,883	EX	C	III	C	C	C	C	C
	D	8,883	AV	LD	III	O	C	C	C	C
	E	*No designation*								
Sand Dunes	A	11,453	AV	O	I, III	O	C	NREC	C	C
	B	11,453	AV	O	I, III	O	C	NREC	C	C
	C	11,453	EX	C	I, III	C	C	NREC	C	C
	D	9,387	AV	O	I, III	O	C	NREC	C	C
	E	*No designation*								

ACEC/RNA	Alternative	Acres	ROW's [1]	OHV [2]	VRM [3]	Grazing	Wood/ plant collecting [4]	Minerals [5] Locatable	Leasable	Salable
Fossil Lake	A	6,660	AV	C	I, III	C	C	O	NSO	O
	B	6,660	AV	C	I, III	C	C	O	NSO	O
	C	6,660	EX	C	I, III	C	C	O	C	C
	D	9,379	AV	C	I, III	C	C	O	NSO	C
	E	*No designation*								
Remainder of ACEC	A	8,960	AV	O	III	O	C	O	O	O
	B	8,580	AV	O	III	O	C	O	O	O
	C	8,580	EX	C	III	C	C	O	C	C
	D	7,927	AV	LD	III	O	C	O	O	O
	E	*No designation*								
Warner Wetlands ACEC	A	53,087	AV	LD	IV	L	C	O	O, NSO	C, O
	B	53,087	AV	LD	IV	L	C	O	O, NSO	C, O
	C	53,087	EX	C	I	L	C	O	O, NSO	C, O
	D	53,087	AV	LD	III	L	C	O	O, NSO	C, O
	E	*No designation*								
Proposed ACEC's										
Abert Rim ACEC	A	*No designation but wilderness IMP applies*						NREC	C	C
	B	*No designation*						NREC	C	C
	C	18,019	EX	LD	I	O	O	NREC	C	C
	D	18,019	AV	LD	I	O	O	NREC	C	C
	E	*No designation*								
Black Hills ACEC/RNA	A	*No designation*						O	O	O
	B	*No designation*						O	O	O
	C	3,049	EX	C	II	C	C	O	C	C
	D	3,049	AV	LD	III	O	C	O	O-NSO	O
	E	*No designation*								

ACEC/RNA	Alternative	Acres	ROW's [1]	OHV [2]	VRM [3]	Grazing	Wood/ plant collecting [4]	Minerals [5] Locatable	Leasable	Salable
Connley Hills ACEC/RNA	A	*No designation*						O	O	O
	B	3,599	AV	LE	IV	O	O	O	O-NSO	O
	C	3,599	EX	LD	II	C	C	O	C	C
	D	3,599	AV	LD	III	O	C	O	O-NSO	O
	E	*No designation*								
Fish Creek Rim ACEC/RNA	A	*No designation but wilderness IMP applies*						O, NREC	C, O	C, O
	B	*No designation but wilderness IMP applies*						O, NREC	C, O	C, O
	C	8,725	EX	LD	I, II	O	O	O	C, O	C, O
	D	8,725	AV	LD	I, II	O	O	O	C, O	C, O
	E	*No designation*								
Foley Lake ACEC/RNA	A	*No designation*						O	O	O
	B	*No designation*						O	O	O
	C	2,747	EX	LD	II	C	C	O	C	C
	D	2,230	AV	LD	III	O	C	O	O	O
	E	*No designation*								
Guano Creek/Sink Lakes ACEC/RNA	A	*No designation but wilderness IMP applies*						NREC	C, O	C, O
	B	*No designation but wilderness IMP applies*						NREC	C, O	C, O
	C	4,936	EX	LD	I, II	C	O	NREC	C	C
	D	4,936	AV	LD	I, III	C	O	NREC	C	C
	E	*No designation*								

ACEC/RNA	Alternative	Acres	ROW's [1]	OHV [2]	VRM [3]	Grazing	Wood/ plant collecting [4]	Minerals [5] Locatable	Leasable	Salable
Hawksie-Walksie ACEC/RNA	A	*No designation but wilderness IMP applies*						NREC	C	C
	B	*No designation*						NREC	C	C
	C	17,339	EX	LD	I, II	O	C	NREC	C, O	C, O
	D	17,339	AV	LD	I, III	O	O	NREC	C, O	C, O
	E	*No designation*								
High Lakes ACEC	A	*No designation*						O	O	O
	B	*No designation*						O	O	O
	C	40,095	EX	LD	III	O	O	O	C	C
	D	36,755	AV	LD	III	O	O	O	O	O
	E	*No designation*								
Juniper Mountain ACEC/RNA	A	*No designation*						O	O	O
	B	*No designation*						O	O	O
	C	6,335	EX	LD	II	C	C	O	C	C
	D	6,335	AV	LD	IV	O	O	O	O-NSO	O
	E	*No designation*								
Rahilly-Gravelly ACEC/RNA	A	*No designation*						O	O	O
	B	*No designation*						O	O	O
	C	20,127	EX	LD	III	O	O	O	O-NSO	C
	D	19,648	AV	LE	III	O	O	O	O-NSO	O
	E	*No designation*								
Red Knoll ACEC	A	*No designation*						O	O	O
	B	*No designation*						O	O	O
	C	11,588	EX	LD	II	C	O	C	C	C
	D	11,127	AV	LD	II	O	O	C, O	C, O	C, O
	E	*No designation*								

ACEC/RNA	Alternative	Acres	ROW's [1]	OHV [2]	VRM [3]	Grazing	Wood/ plant collecting [4]	Minerals [5] Locatable	Leasable	Salable
Spanish Lake ACEC/RNA	A	*No designation*						O	O	O
	B	*No designation*						O	O	O
	C	4,699	EX	LD	III	O	O	O	C	C
	D	4,699	AV	LD	IV	O	O	O	O	O
	E	*No designation*								
Table Rock ACEC	A	*No designation*						O	O	O
	B	*No designation*						O	O	O
	C	5,891	EX	LD	II	C	O	O	C	C
	D	5,138	AV	LD	II	O	O	O	O-NSO	C
	E	*No designation*								

[1] ROW's = rights-of-way; EX = exclusion ~ no new rights-of-way would be allowed; AV = avoid ~ new rights-of-way would be allowed if there were no other options.
[2] OHV = off-highway vehicle; C = closed to OHV's; O = open to OHV's; LD = limited to designated roads and trails; LE = limited to existing roads and trails.
[3] VRM = visual resource management
[4] Plant collecting applies only to collection of plants or plant material for personal use; plant or plant material collecting for commercial purposes including firewood cutting would not be allowed in any of the ACEC's.
[5] Minerals; O = open for exploration, development, extraction of minerals; C = closed to all mineral activity; NSO = no surface occupancy allowed during exploration, development or extraction of oil, gas, or geothermal resources. In those ACEC's which overlap with WSA's, the WSA portion would be open to locatable minerals; however, no actions requiring reclamation are allowed (NREC). WSA's are closed to the sale or lease of minerals in all alternatives. If these WSA's are not designated wilderness, they would continue to be open to locatable minerals and could be open to sale or lease of minerals, depending on the alternative.

Table 3-4.—*Overlap of existing and proposed ACEC's and WSA's (in acres)* [1]

Area of critical environmental concern	Alter-native C	Alter-native D	Wilderness study area	Alter-native C overlap	Alter-native D overlap	WSA recom-mendation
Abert Rim Addition (P)	18,019	18,019	Abert Rim	18,019	18,019	Suitable
Devils Garden (E)	28,241	28,241	Devils Garden Lava Bed	28,241	28,241	Suitable
Fish Creek Rim (P)	8,725	8,725	Fish Creek Rim	6,876	6,876	Suitable
Guano Creek/Sink Lakes (P)	4,936	4,936	Guano Creek	4,936	4,936	Suitable
Hawksie-Walksie (P)	17,339	16,369	Sage Hen Hills	963	963	Suitable
High Lakes (P)	40,095	36,755	Guano Creek	1,240	176	Suitable
Lake Abert (E)	50,117	50,117	Abert Rim	7,110	7,110	
Lost Forest/Sand Dunes/Fossil Lake (E)	35,575		Sand Dunes, Lost Forest ISA [2]	24,516	24,516	Nonsuitable

[1] Acreage currently designated for existing (E) ACEC's and proposed (P) for Alternatives C and D. Proposed ACEC's would not be designated under Alternatives A, B, and E.
[2] ISA = instant study area.

The entire ACEC would be closed to livestock grazing. Visual resources would be managed as under Alternative A. Wood cutting for firewood, posts, or other uses; and gathering vegetative products, such as juniper boughs or berries or other living plant material, would be prohibited. Gathering dead or down wood for onsite camping use would also be prohibited. OHV use would be limited to designated roads and trails as shown on Map R-6. The road into the garden would be closed, and the road from BLM Road 6179 to Derrick Cave would also be closed. The ACEC would be managed as VRM Class II if it is not designated wilderness.

Alternative D

Under this alternative, the existing Devils Garden ACEC would be retained (Maps SMA-4 and -5). Mineral activity would be managed the same as described under Alternative A. New rights-of-way would be avoided unless there were no other options available.

Livestock grazing would be managed according to existing permit stipulations. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important resources and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

All other management in the ACEC would be the same as described under Alternative C.

Alternative E

Under this alternative the ACEC designation would be revoked. The area would continue to be managed according to the wilderness IMP until such time as Congress makes a decision regarding wilderness designation for the area.

Management Direction by Alternative—Lake Abert ACEC

Alternatives A–D

Under Alternatives A, B, C, and D, the Lake Abert ACEC (50,117 acres) would be retained (Maps SMA-1, -2, -3, -4, -6, and -7). Management of the ACEC would be according to the existing management plan (BLM 1996) summarized in Appendix I; with the following changes:

1) Under Alternative B, the total dissolved solids and lake-level restrictions on mining would be removed.

2) Under Alternative C, OHV's would be limited to designated roads and trails. The entire west-side-of-the-lake road would be closed. In the rest of the ACEC, all existing roads would be designated open with possible seasonal closures (see below).

3) Livestock use would continue based on existing permit stipulations and approved grazing systems. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

4) Noxious weeds in the ACEC would be managed according to the "Abert Rim Weed Management Area Plan."

Alternative E

Under this alternative, the Lake Abert ACEC designation would be revoked. Management of the area would be the same as that prescribed for the rest of the planning area under this alternative.

Management Direction by Alternative—Lost Forest/ Sand Dunes/Fossil Lake ACEC/RNA

Alternative A

The existing 36,120-acre ACEC, including the Lost Forest RNA/ISA, would be retained and managed according to the "High Desert Management Framework Plan" (Maps SMA-1 and -8). The Lost Forest RNA/ ISA and the Sand Dunes WSA would be managed according to the wilderness IMP until such time as Congress makes a determination regarding wilderness

designation for the two areas.

The mineral withdrawal on Lost Forest RNA/ISA would be retained. The Sand Dunes WSA and Lost Forest RNA would be closed to sale or lease of minerals. The Fossil Lake area would be open to all mineral activity, subject to access and no-surface-occupancy restrictions. Any locatable mineral activity in the Sand Dunes WSA is currently subject to the "no reclamation" stipulation. Should Congress remove the Sand Dunes WSA from wilderness study, mineral activity would be restricted in a similar fashion as the rest of the ACEC area.

The Sand Dunes and Fossil Lake areas are excluded from location of new rights-of-way, except that new rights-of-way could be placed in the existing corridor through Fossil Lake. New rights-of-way in the Lost Forest RNA would be avoided.

The vehicle closure on Fossil Lake would be retained. The unfenced closure boundary would be signed. Vehicle use in the Lost Forest RNA/ISA would be limited to designated roads and trails; and the Sand Dunes would remain open to OHV use. The rest of the area within the ACEC boundary would be limited to existing roads and trails.

The ACEC, except for Fossil Lake, would continue to be open to camping. Cutting or collecting firewood in any of the ACEC, including the Lost Forest RNA/ISA, would be prohibited, as would the gathering of vegetative products such as boughs or berries. Means to provide firewood for campers on high-use weekends would be investigated including permitting a concessionaire to sell firewood.

The present grazing management in the ACEC would continue: Fossil Lake is excluded from grazing; the remainder of the area falls in several pastures of Allotment 10103. The WSA and RNA/ISA would continue to be managed as VRM Class I. The rest of the area would be managed as VRM Class III.

Alternative B

The existing ACEC and RNA would be retained. The boundary of the ACEC would be amended to exclude the Department of Defense withdrawal along the south boundary of the ACEC (Map SMA-2). In addition, the northern boundary of the ACEC and the Lost Forest RNA would be made consistent and relocated to the southern edge of BLM Road 6141. These two changes would reduce the size of the area to 35,575 acres. The Lost Forest mineral withdrawal and ISA boundary would remain as it is at present (Map SMA-8).

With the exception of the boundary changes described above, mineral development and OHV use would be managed as described under Alternative A. The road through the Lost Forest would be upgraded to a single-lane road with turnouts and parking pulloffs and surface similar to the access road to the west, Road 6151. To better accommodate recreation use, private individual(s) would be encouraged to develop a commercial campground on private land adjacent to or near the sand dunes. If the Sand Dunes WSA is not designated wilderness, BLM would consider developing a campground on adjacent Federal land and charge fees for use if no private campground is developed.

The existing electrical transmission line through the Fossil Lake would be a utility corridor up to 2,000-feet wide for siting future utility lines or rights-of-way. Stipulations and tower spacing would be used to protect relevant and important resources. Routing rights-of-way through the ACEC outside this corridor would be avoided unless there were no other options.

Livestock grazing, firewood collecting, minerals activities, and VRM class would be managed as described under Alternative A.

Alternative C

The existing ACEC/RNA would be retained and the boundary would be realigned as described under Alternative B (Map SMA-3). The Lost Forest ISA and the Sand Dunes WSA would be managed according to the wilderness IMP until such time as Congress makes a determination regarding wilderness designation for the two areas.

Actions would be pursued to acquire private inholdings and adjacent private land from willing landowners and include them in the ACEC to facilitate management of relevant and important resources. A corridor 300-feet wide would be identified for the existing electrical transmission line across Fossil Lake. Any new rights-of-way would be placed within this corridor. The rest of the ACEC would be excluded from all new rights-of-way except for any necessary to access non-Federal land.

The entire ACEC, including the Sand Dunes, would be closed to OHV's. All roads in the ACEC, except the access road, Road 6151, would be closed. Road 6151 would be closed at the Lost Forest RNA western

boundary. The ACEC/RNA would be closed to overnight camping and would be open to day use only. Open fires and the collecting of firewood would be prohibited in the ACEC. Tree cutting for firewood, posts, or other uses; or the collection of vegetative products and materials such as boughs or berries would be prohibited throughout the ACEC. Visual resource management would be the same as described under Alternative A.

The mineral withdrawal on the Lost Forest ISA would be retained. The Sand Dunes WSA, Lost Forest RNA, and Fossil Lake areas would be closed to the sale and lease of minerals. Fossil Lake would be open to locatable mineral activity, subject to access restrictions and plan of operation requirements. Any locatable mineral activity in the Sand Dunes WSA would be subject to the "no reclamation" stipulation. Should Congress remove the Sand Dunes WSA from wilderness study, the area would be open to locatable minerals. Locatable mineral activity within the remainder of the ACEC (except Lost Forest RNA/ISA) would be subject to access restrictions and require a plan of operation.

The entire ACEC would be closed to livestock grazing to protect relevant and important resources. Fences would be installed as needed to keep livestock out. Any fence construction in the WSA or ISA would be subject to the wilderness IMP.

Alternative D

Under this alternative, the existing ACEC/RNA would be retained and the boundaries realigned as described under Alternative B (Maps SMA-4 and -9). Management applicable to the ISA and WSA would be the same as described under Alternative A.

Actions would be pursued to acquire private inholdings and adjacent private land from willing landowners and include them in the ACEC to facilitate management of relevant and important resources. The existing electrical transmission line through the Fossil Lake would be identified as a right-of-way corridor up to 1000-feet wide for future utility lines or other rights-of-way. New rights-of-way in the ACEC outside this corridor would be avoided unless there are no other options.

OHV's would be managed the same as under Alternative A, except that the Fossil Lake exclosure would be enlarged to include an additional 2,719 acres (Map SMA-9). The boundary shown on this map is an approximation based on a legal description. This boundary would be refined in the Proposed RMP/Final EIS to leave as much of the large, contiguous dunes in the open area as possible. The road through the Lost Forest RNA/ISA would be upgraded as described under Alternative B to prevent widening and braiding of road and resulting damage to relevant and important resources.

Primitive camping areas or sites would be designated in the Lost Forest RNA, with camping allowed only in these sites. Camping would not be allowed at Sand Rock inside the Lost Forest. Parking areas along the main road through the Lost Forest would be provided for day use.

Camping areas within the Sand Dunes WSA would be designated and camping allowed only at these sites (see Map SMA-9). Use of these three camping/staging areas would be managed on a rotational basis, i.e., two of the camping/staging areas would be open and available to use and the other area would be closed for an indeterminant amount of time (2–6 years) to allow natural rehabilitation to occur. The length of the closure would be based on the following criteria: (1) success of natural revegetation, (2) obliteration of human activities by the natural movement of sand, and (3) the public's adherence to the closures. Specific travel routes from the camping/staging areas to the barren dunes which are open to OHV use would be established. Adaptive management activities which would allow the continued use of each of these camping/staging areas while protecting the natural values of the area would be adopted as necessary to ensure their long-term use and protection. Similar to Alternative B, the establishment of a campground on private lands within the Sand Dunes area would be encouraged.

Firewood cutting and collecting would be managed the same as described for Alternative C. Minerals activities and VRM would be managed the same as described under Alternative A.

The mineral withdrawal on the Lost Forest ISA would be retained. The Sand Dunes WSA and Lost Forest RNA areas would be closed to the sale and lease of minerals. Fossil Lake would be open to locatable mineral activity and open to mineral leasing subject to access and no-surface-occupancy restrictions. Fossil Lake would be closed to mineral material disposal. Any locatable mineral activity in the Sand Dunes WSA would be subject to the "no reclamation" restriction of the wilderness IMP. Should Congress remove the Sand Dunes WSA from wilderness study, mineral location would be allowed. Mineral activity within the remain-

der of the ACEC (except Lost Forest RNA/ISA) would be allowed.

The grazing closure on Fossil Lake would be expanded to include an additional 2,719 acres. This would require construction of a fence within a WSA. Livestock use in the rest of the ACEC would continue based on existing permit stipulations. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Alternative E

The Lost Forest/Sand Dunes/Fossil Lake ACEC designation and the Lost Forest RNA designation would be revoked. The former ACEC would be managed in the same manner as surrounding land. Revocation of the Lost Forest withdrawal would require congressional action. The Lost Forest ISA and Sand Dunes WSA designations would continue. These areas would continue to be managed according to the wilderness IMP until such time as Congress makes a decision regarding their designation as wilderness.

Management Direction by Alternative—Warner Wetlands ACEC

Management direction common to Alternatives A–D: Under Alternatives A–D, the existing Warner Wetlands ACEC (53,087 acres) would be retained. Management of the ACEC would be according to the existing 1990 "Warner Wetlands Area of Critical Environmental Concern (ACEC) Management Plan," except as highlighted in the alternative descriptions below (Maps SMA-1, -2, -3, -4, and -10).

Weed management in the ACEC would be conducted according to the 1990 "Warner Basin Weed Management Area Plan."

The eastern half of the ACEC is currently closed to mineral disposal, open to leasing with no-surface-occupancy restrictions, and is open to mineral location subject access and seasonal restrictions along with the need to prepare a plan of operations. The western half is open to mineral disposal subject to access restrictions, open to mineral leasing subject to access restrictions, and open to mineral locations subject to access restrictions and preparation of a plan of operation. Mineral management would be the same under these four alternatives.

Alternatives A and B

The core wetland area (potholes and acquired lands) is currently closed to livestock grazing. The remainder of the ACEC is grazed in accordance with an approved allotment management plan (BLM 1990g). This would continue under both alternatives.

Vehicles would be restricted to designated roads and trails (Map SMA-10). The ACEC would be open to new rights-of-way under Alternatives A and B (Maps L-2 and -6) .

Alternative C

The 400-acre meadow management area at Hart Bar and the southwest portion of the potholes area currently grazed would be closed to grazing along with the core wetland area (potholes and acquired lands). The remainder of the ACEC would be grazed in accordance with an approved allotment management plan (BLM 1990g).

Vehicles would be restricted to designated roads and trails. The ACEC would be considered a right-of-way exclusion area under Alternative C (Map L-7).

Alternative D

Most of the core wetland area (potholes and acquired lands) would remain closed to livestock grazing. The remainder of the ACEC would be grazed in accordance with an approved allotment management plan (BLM 1990g). However, under Alternative D, management of the approximately 400-acre meadow management area at Hart Bar would be changed to manage for tall-grass nesting bird species rather than short-grass nesting species. This would involve incorporating the meadow management area into the southern portion of the core wetland acquired lands portion of the ACEC (e.g., that portion south of Anderson Lake within the ditch and dike system [Map SMA-10]). This area would be divided by fencing or natural barriers. The southern portion would utilize fire, mowing, and livestock grazing (authorized on a temporary nonrenewable grazing basis) to meet specific management objectives or as a pretreatment prior to planned prescribed fire to

facilitate/enhance fuel breaks in the core wetland acquired lands portion of the ACEC, including the former meadow management area.

Vehicles would be restricted to designated roads and trails (Map SMA-10). The ACEC would be considered a right-of-way exclusion area under Alternative D (Map L-8).

Alternative E

Under this alternative, the Warner Wetlands ACEC designation would be revoked. Management of the area would be the same as that prescribed for the rest of the planning area under this alternative.

Management Direction by Alternative—Proposed Abert Rim Addition to Lake Abert ACEC

Management direction common to Alternatives A–D: Noxious weeds would be managed according to the direction set forth in the 1995 "Abert Rim Weed Management Area Plan." The area would continue to be managed according to the wilderness IMP.

Alternative A

Under this alternative, this proposed addition would not be added to the Lake Abert ACEC (Map SMA-1). Livestock grazing would continue as it is currently managed. The majority of this area is in Allotment 517 which is grazed from April through October. The south end of the proposed add-on is within Allotments 400 and 518. Allotment 518 is grazed in summer. This portion of Allotment 400 is unalloted and has no grazing use.

Due to the designation as a WSA, OHV's would be limited to existing roads and trails. If the WSA is not designated wilderness, it would be open to OHV's. Mineral management of this area is also guided by WSA status. The area is closed to mineral leasing and disposal. Locatable mineral activity is limited by the "no reclamation" requirement of the wilderness IMP (BLM 1995b). Should the area be removed from WSA status, the area would become open to all mineral activity.

Alternative B

The proposed addition would not be added to the existing Lake Abert ACEC. It would be managed the same as under Alternative A (Map SMA-2).

Alternative C

A total of 18,019 acres would be added to the existing Lake Abert ACEC under this alternative (Maps SMA-3). The add-on area lies completely within the Abert Rim WSA and would be managed according to the 1996 "Lake Abert ACEC Management Plan" and the wilderness IMP. OHV's would be limited to designated roads and trails.

The area would be open to grazing. Grazing use would be based on existing permit stipulations. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important resources and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Mineral management of this area would be guided by the wilderness IMP. The area would be closed to mineral leasing and disposal. Locatable mineral activity would be limited by the "no reclamation" requirement of the wilderness IMP. Should the area be removed from WSA status, it would become open mineral leasing and disposal subject to access and special design restrictions. It would also be open to locatable mineral activity subject to access restrictions.

Alternative D

A total of 18,019 acres would be added to the existing Lake Abert ACEC under this alternative (Maps SMA-4 and -7). Management would be the same as under Alternative C, except that OHV's would be limited to existing roads and trails.

Alternative E

Under this alternative, no additional area would be added to the existing Lake Abert ACEC.

Management Direction by Alternative—Proposed Black Hills ACEC/RNA

Alternative A

No ACEC would be designated under this alternative. Management of the area would continue as at present.

OHV use would be limited to designated roads and trails. The area would be open to all mineral uses including locatable, salable, and leasable minerals subject to approval of a site-specific NEPA analysis. Rights-of-way for utility lines or other uses would be excluded. The area would continue to be managed as VRM Class IV.

The area would be retained as part of the Paisley Herd Management Area. Livestock grazing would continue as presently managed. The area is in Allotment 418 which is grazed from March through May. Tree cutting for firewood, posts, or other uses; and gathering of vegetative products, including western juniper boughs or berries or any living or dead plant material, would be prohibited for both personal or commercial use. Overnight camping in the area would be allowed.

The conservation agreement with USFWS for the management and protection of Cusick's buckwheat and snowline cymopterus would be completed and signed. The existing habitat management plan for the two species would continue in force, as would monitoring and research of the plants.

Alternative B

No ACEC would be designated. Management under this alternative would be the same as under Alternative A, except that new rights-of-way would be avoided rather than excluded.

Alternative C

Under this alternative, 3,049 acres would be designated as an ACEC and a RNA (Map SMA-3). The conservation agreement with USFWS for Cusick's buckwheat and snowline cymopterus would be completed, signed, and implemented. Monitoring and research on these two species would continue. The existing habitat management plan for these two species would continue in force.

The area would be closed to OHV's. A parking area outside the ACEC would be designated for public and administrative use. Overnight camping in the ACEC/RNA would be prohibited and day-use only would be allowed.

The ACEC/RNA would be open to locatable minerals. It would be closed to sale or lease of minerals. It would also be closed to livestock grazing and to wild horse use to protect sensitive plant species. Fences would be installed if needed to exclude livestock and wild horses. The area would then become an inactive part of the Paisley Herd Management Area. The ACEC/RNA would be excluded from new rights-of-way and other realty actions except to provide access to non-Federal land. Legal access across adjacent private land would be acquired if necessary in order to maintain administrative access. Tree cutting for firewood, posts, or other uses; and gathering of vegetative products, including juniper boughs or berries or any living or dead plant material, would be prohibited. The area would be managed as VRM Class II.

Alternative D

Under this alternative, 3,049 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -11). The conservation agreement with USFWS for Cusick's buckwheat and snowline cymopterus would be completed, signed, and implemented. Monitoring and research on these two species would continue. The existing habitat management plan for these two species would continue in force.

OHV's would be limited to designated roads and trails. Overnight camping in the ACEC/RNA would be prohibited and day-use only allowed. Vehicle parking at the existing parking area would be allowed. Wood cutting or gathering of vegetative products, such as juniper boughs, berries, or any living or dead plant material, would be prohibited. The area would be managed as VRM Class III.

The ACEC/RNA would be open to all minerals activity. All minerals activities would be subject to stipulations and mitigating measures to protect relevant and important values including a no-surface-occupancy stipulation for any geothermal or oil and gas activity. New rights-of-way would be avoided unless there were no other options and then only with appropriate mitigating measures to protect relevant and important values. Legal access across private land would be obtained if needed for public and administrative access.

Livestock grazing in the ACEC/RNA would continue based on existing permit stipulations. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important resources and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated

for impacts and permitted where relevant and important values would be maintained or enhanced. If needed, fences would be installed to exclude livestock and wild horse use.

Alternative E

No ACEC would be designated under this alternative.

Management Direction by Alternative—Proposed Connley Hills ACEC/RNA

Alternative A

No ACEC would be designated under this alternative. An area of 1,800 acres would continue to be managed under the 1985 interim RNA management plan. The intent would be to protect the western juniper/bluebunch wheatgrass, western juniper/Idaho fescue, and western juniper/big sagebrush/bluebunch wheatgrass plant communities. The area would be open to OHV use. The area would be open to all minerals activities based on approval of a site-specific NEPA analysis. The south portion of the area is excluded from the placement of new rights-of-way. The rest of the area would be open to new rights-of-way. Present grazing management would continue. The area is in Allotment 705 which is grazed from March through June.

Connley Hills is classified as a combination of VRM Class III and IV. Existing roads would be kept open. The area would be open to recreation use including overnight camping and commercial group use of the area. Tree cutting for firewood, posts, or other uses would be prohibited; however, down and dead wood could be collected for personal use. Gathering vegetative products such as juniper boughs or berries would be allowed.

Alternative B

Under this alternative, 3,599 acres would be designated as an ACEC and a RNA (Map SMA-2). The ACEC/RNA would be open to exploration, development, and extraction of locatable, salable, and leasable minerals. Any geothermal or oil and gas activity would be subject to a no-surface-occupancy stipulation. New rights-of-way would be avoided unless there were no other options and then only with appropriate mitigating measures to protect relevant and important resources. Legal access across private land would be obtained if needed for public and administrative access. Existing grazing use would continue. Tree cutting for firewood, posts, or other uses would be prohibited. Gathering vegetative products, such as juniper boughs or berries, would be allowed. OHV's would be limited to existing roads and trails. Existing roads would be kept open and erosion control measures would be implemented where needed within the ACEC. The ACEC/RNA would be open to overnight camping. Visual resources would be managed similar to Alternative A.

Alternative C

Under this alternative, 3,599 acres would be designated as an ACEC and a RNA (Map SMA-3). The area would be closed to sale or lease of minerals, but would be kept open for locatable mineral entry. New rights-of-way and other realty actions would be excluded except to provide access to non-Federal land. Action would be taken to acquire the 80-acre inholding from a willing landowner.

The ACEC/RNA would be closed to grazing to protect an important grass community. Fences would be installed as needed to keep livestock out of the area.

Important sites within the area would be nominated to the National Register of Historic Places (NRHP). Public use of the south end of the ACEC/RNA would be limited to day-use only. No camping would be allowed in the ACEC. OHV's would be limited to designated roads and trails. Unneeded roads or trails would be closed and rehabilitated. Tree cutting for firewood, posts, or other uses; and gathering vegetative products, such as juniper boughs or berries or any other alive or dead plant material, would be prohibited. The area would be managed as VRM Class II.

Alternative D

Under this alternative, 3,559 acres would be designated as an ACEC and an RNA (Maps SMA-4 and -12). The ACEC/RNA would be open to all mineral uses. Leasable mineral activity would be subject to a no-surface-occupancy stipulation. New rights-of-way would be avoided unless there were no other options and then only with stipulations to protect relevant and important resources. Actions would be taken to acquire the 80-acre private inholding from a willing landowner.

Livestock use would continue based on existing permit stipulations and approved allotment management plans. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the

relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Camping would be allowed in designated areas only. OHV's would be limited to designated roads and trails. The ACEC/RNA would be managed as VRM Class III.

Wood cutting or gathering plant material and cultural resources and research in the RNA/ACEC would be managed the same as described under Alternative C.

Alternative E

No ACEC would be designated under this alternative.

Management Direction by Alternative—Proposed Fish Creek Rim ACEC/RNA

Alternative A

No ACEC would be designated. That part of the area within the WSA would be managed according to the wilderness IMP until such time as Congress makes a decision regarding wilderness designation. Management of the part of the area outside of the WSA would continue as at present. Livestock grazing use would continue as at present: the area is in Allotment 202 which is grazed from mid-April through mid-September.

Alternative B

No ACEC would be designated. Management would be the same as that described under Alternative A.

Alternative C

Under this alternative, 8,725 acres would be designated as an ACEC and a RNA (Maps SMA-3). Most of the proposed ACEC/RNA is within the Fish Creek Rim WSA, and actions in the area would be managed according to the wilderness IMP until such time as a decision is made by Congress regarding wilderness designation. Grazing use would be based on existing permit stipulations. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important resources and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced. Any fence construction in the WSA would be subject to the wilderness IMP guidelines. The spring and wetland site in the north end (outside the WSA) of the area would be rehabilitated.

A strategy would be developed to protect and manage the prostrate lousewort and the nodding melic grass, two sensitive plant species.

The ACEC/RNA, outside of the WSA boundary, would be open to locatable mineral entry under a plan of operation. Inside the WSA boundary, mineral location would be subject to the "no reclamation" stipulation. It would also be closed to the sale or lease of minerals. If the WSA is not designated wilderness, it would be open to all mineral activity with appropriate stipulations to protect relevant and important resources.

New rights-of-way would be excluded from the area except for any necessary to access non-Federal property.

Tree cutting for firewood, posts, or other uses; and gathering of vegetative products, such as boughs or berries or any other plant material, would be prohibited. Collecting down and dead wood for onsite camping use would be allowed. OHV's would be limited to designated roads and trails. The WSA is managed as VRM Class I. If it is not designated wilderness, it would be managed as VRM Class II.

Alternative D

Under this alternative, 8,725 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -13). Since the proposed ACEC/RNA is within the Fish Creek Rim WSA, actions would be managed according to the wilderness IMP until such time as a decision is made by Congress regarding wilderness designation.

Livestock grazing and OHV's would be managed the same as under Alternative C.

A strategy would be developed to protect and manage the prostrate lousewort and the nodding melic grass, two sensitive plant species.

The ACEC/RNA, outside the WSA boundary, would be open to locatable mineral entry. Inside the WSA boundary, mineral location would be subject to the no reclamation stipulation. It would also be closed to leasable and salable minerals. If the WSA is not designated wilderness, it would be open to all mineral activity with appropriate stipulations to protect relevant and important resources.

New rights-of-way in the ACEC/RNA would be avoided unless no other options are available.

Tree cutting for firewood, posts, or other uses; and the commercial gathering of vegetative products, such as juniper boughs or berries, would be prohibited. Gathering vegetative products or plant material for personal use would be allowed. Collecting down and dead wood for onsite camping use would also be allowed. The WSA is managed as Visual Resource Management (VRM) Class I. If it is not designated wilderness, it would be managed as VRM Class II.

Alternative E

No ACEC/RNA would be designated under this alternative.

Management Direction by Alternative—Proposed Foley Lake ACEC/RNA

Alternative A

Under this alternative, no ACEC or RNA would be designated. The area would be open to OHV's. The area would be open to all minerals activities based on approval of a site-specific NEPA analysis. The area would also be open to new rights-of-way. Livestock grazing use would continue as at present. The area is divided between Allotment 515, which is grazed in the spring and lightly in the summer and fall, and Allotment 517, which is grazed from April through October. The area would be managed as VRM Class IV as is the surrounding area.

The conservation agreement with the USFWS for the Columbia cress would be retained and would continue to be followed.

Alternative B

Management under this alternative would be the same as that described under Alternative A.

Alternative C

Under this alternative, 2,747 acres would be designated as an ACEC and a RNA (Map SMA-3). This alternative would include Featherbed Lake in the proposal where Columbia cress has been located in the past. Archeological resources are also found there. The ACEC/RNA would be open to locatable mineral entry closed to sale or lease of minerals. New rights-of-way would be excluded except to provide access to non-Federal property. Livestock grazing would be excluded to protect sensitive plant species. Fences would be constructed as needed to exclude livestock. The existing exclosure to protect the Columbia cress would be enlarged. Eligible cultural sites would be nominated to the NRHP. The ACEC/RNA would be managed as VRM Class II. OHV's would be limited to designated roads and trails.

The conservation agreement with the USFWS for the Columbia cress would be retained and would continue to be followed.

Alternative D

Under this alternative, 2,230 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -14). The Featherbed Lake portion would be excluded since the Columbia cress has not been seen growing in or around the lake bed in 8 years. The boundary on the east side of the ACEC/RNA would be set back 100 feet from the existing county road right-of-way. New rights-of-way in the ACEC/RNA would be avoided unless there are no other options. It would be open to all mineral activity with stipulations to protect relevant and important resources.

Livestock use would continue based on existing permit stipulations and approved allotment management plans. The exclosure at Foley Lake itself would be enlarged to protect the Columbia cress from further grazing. Other changes in grazing use could also be necessary. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Eligible cultural resource sites would be nominated to the NRHP. The ACEC/RNA would be managed as VRM Class III. OHV's would be limited to designated roads and trails.

Alternative E

No ACEC/RNA would be designated under this alternative.

Management Direction by Alternative—Proposed Guano Creek/Sink Lakes ACEC/RNA

Alternative A

No ACEC would be designated under this alternative. The area (except the Billy Burr parcel) is wholly within the Guano Creek WSA. Resource values would be managed according to the wilderness IMP until such time as Congress makes a decision regarding wilderness designation. The Billy Burr parcel would be managed the same as adjacent non-WSA land. The conservation agreement with the USFWS for Crosby's buckwheat and grimy ivesia would be completed. Monitoring and research would continue. Collection of vegetative material for personal use would be allowed. Commercial collection would be prohibited.

If the WSA is not designated wilderness, management would be as follows under this alternative: OHV's would be limited to existing roads and trails; the area would be open to all mineral activities based on approval of a site-specific NEPA analysis; it would be open to new realty actions including rights-of-way; it would continue to be closed to livestock grazing as prescribed by the legislation authorizing the exchange of jurisdiction between the BLM and USFWS; and the area would be managed as VRM Class III.

Alternative B

The proposed ACEC would not be designated under this alternative. Management would be the same as prescribed under Alternative A.

Alternative C

Under this alternative, 4,936 acres would be designated as an ACEC and as a RNA (including the Billy Burr parcel) (Map SMA-3). The north boundary would conform with the Hart Mountain National Wildlife Refuge south boundary.

The area would be open for locatable mineral entry; however, the no reclamation restriction would apply to the WSA. It would be closed to sale or lease of minerals. New rights-of-way would be excluded except to provide access to non-Federal property. The grazing closure in the area would be retained as prescribed in the jurisdictional exchange legislation.

The conservation agreement with the USFWS for Crosby's buckwheat and grimy ivesia would be completed. Monitoring and research would continue. Collection of vegetative material for personal use would be allowed. Commercial collection would be prohibited.

OHV's would be limited to designated roads and trails. Commercial recreation uses would be allowed. The ACEC/RNA would be managed as VRM Class I due to WSA status. If the area is not designated wilderness, the ACEC/RNA would be managed as VRM Class II.

Alternative D

Under this alternative, 4,936 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -16). Management direction is the same as for Alternative C, except that new rights-of-way and other realty actions would be avoided unless there were no other alternatives. If the area is not designated wilderness, the ACEC/RNA would be managed as VRM Class III. The WSA would be closed to salable or leasable mineral activity. If no wilderness is designated, the area would be open to all minerals. Any leasable mineral activity would be subject to a no-surface-occupancy stipulation.

Alternative E

No ACEC would be designated under this alternative.

Management Direction by Alternative—Proposed Hawksie-Walksie ACEC/RNA

Alternative A

Under this alternative, no ACEC would be designated. All of this proposed area is within the Hawk Mountain WSA and would be managed according to the wilderness IMP until such time as Congress makes a decision regarding wilderness designation.

Alternative B

No ACEC/RNA would be designated. Management under this alternative would be the same as under Alternative A.

Alternative C

Under this alternative, 17,339 acres would be designated as an ACEC and an RNA (Map SMA-3). New rights-of-way would be excluded from the ACEC/RNA except to provide access to non-Federal property. Gathering of vegetative products for personal or commercial use would be prohibited.

Under the wilderness IMP, the area would be closed to sale or lease of minerals. The area would be open to locatable mineral subject to the wilderness IMP "no reclamation" stipulation. Should the area be released from WSA status, it would become open to mineral sale and leasing, subject to access, no surface occupancy, and other restrictions/stipulations necessary to protect relevant and important resources. The area would become open to locatable mineral entry subject to access and other restrictions.

A total of 6,786 acres in two areas would be excluded from livestock and wild horse grazing to protect RNA plant community values, if needed. Any fence construction would be subject to the wilderness IMP. In the rest of the ACEC/RNA, livestock grazing use would continue based on existing permit stipulations and the approved "Beaty Butte Allotment Management Plan." Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use.

OHV's would be limited to designated roads and trails. The ACEC/RNA would be managed as VRM Class III without wilderness designation.

Alternative D

Under this alternative, 17,339 acres would be designated an ACEC and a RNA (Maps SMA-4 and -15). New rights-of-way in the ACEC/RNA would be avoided unless there are no other options.

Livestock use would continue based on existing permit stipulations and the approved "Beaty Butte Allotment Management Plan." Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced. Any projects constructed in the WSA would be subject to the wilderness IMP.

Management of minerals, OHV's, VRM, and gathering of vegetative products would be managed the same as under Alternative C.

Alternative E

No ACEC would be designated under this alternative.

Management Direction by Alternative—Proposed High Lakes ACEC

Alternative A

Under this alternative, no ACEC would be designated. The area would be open to all minerals activities based on approval of a site-specific NEPA analysis. The area would also be open to new rights-of-way and other realty actions. Grazing use would continue under the Beaty Butte, O'Keefe Individual, and Hill Camp Allotment Management Plans. Cultural resources would be managed according to BLM policy. Important cultural resources sites would be nominated to the NRHP. Native American traditional uses of the area would be allowed. Commercial collection of plants and vegetative products would be allowed by permit. The area would be open to OHV's. The area would continue to be managed as VRM Class IV. The berm at the north end of Long Lake would be retained.

Alternative B

No ACEC would be designated under this alternative. Management would be the same as that described under Alternative A.

Alternative C

Under this alternative, 40,095 acres would be designated an ACEC (Map SMA-3). A small portion in the northeast corner of this area falls within the Guano Creek WSA and would be managed in accordance with the wilderness IMP. The rest of the ACEC would be open to locatable mineral entry but closed to the sale or lease of minerals. New rights-of-way would be ex-

cluded except to provide access to non-Federal land. Adjacent land on the west side of the ACEC would be acquired from a willing landowner, if such acquisition would improve resource protection or management of the ACEC.

Commercial collection of plants or vegetative products would be prohibited. Collection for individual or personal use would be allowed.

Livestock use would continue based on existing permit stipulations and the approved allotment management plans. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, particularly to cultural plants (plants used for traditional Native American practices), existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

If the berm at the north end of Long Lake is no longer needed, it would be removed. The ACEC would be managed as VRM Class III. OHV's would be limited to designated roads and trails.

The high concentration of greater sage-grouse leks in the ACEC would be managed to maintain the continuity of greater sage-grouse habitat and to avoid disturbance during the breeding season.

Alternative D

Under this alternative, 36,755 acres would be designated as an ACEC (Maps SMA-4 and -16). The south boundary of the ACEC would be set back 100 feet from the north edge of the State Highway 140 right-of-way. The ACEC would be open to all mineral activities with stipulations to protect relevant and important resources. New rights-of-way in the ACEC would be avoided unless there were no alternatives. Legal access across the private land in the vicinity of Badger Hole would be acquired from a willing land-owner if necessary to allow administrative and public access.

Livestock grazing would be managed the same as under Alternative C.

Commercial collection of plants or vegetative products would be prohibited. Collection for individual or personal use would be allowed.

The high concentration of greater sage-grouse leks in the ACEC would be managed to maintain the continuity of greater sage-grouse habitat and to avoid disturbance during the breeding season.

If the berm at the north end of Long Lake is no longer needed, it would be removed. The ACEC would be managed as VRM Class III. OHV's would be limited to designated roads and trails.

Alternative E

No ACEC would be designated under this alternative.

Management Direction by Alternative—Proposed Juniper Mountain ACEC/RNA

Alternative A

Under this alternative, no ACEC would be designated. The area would be open to all mineral activity based on approval of a site-specific NEPA analysis. It would also be open to new rights-of-way and other realty actions. Livestock grazing would continue under current management. Juniper Mountain is in Allotment 515 which is used primarily in the spring and less in summer and early fall.

Existing wood cutting areas would remain open and new ones would be designated according to the existing wood cutting environmental assessment for the LRA. The area would remain open to collection of other vegetative products such as juniper boughs and berries. Overnight camping would continue to be allowed. The area would be open to OHV's and continue to be managed as VRM Class IV.

Alternative B

No ACEC would be designated under this alternative. Management of the area would be the same as described under Alternative A.

Alternative C

Under this alternative, 6,335 acres would be designated as an ACEC and a RNA (Map SMA-3). The ACEC would be open to locatable mineral entry but closed to the sale or lease of minerals. The ACEC would also be excluded from new rights-of-way except to provide access to non-Federal land. Actions would be taken to

acquire the 80-acre inholding from a willing landowner and make it part of the ACEC. The existing wood cutting areas would be closed. Future tree cutting for firewood, posts, or other uses; and gathering vegetative products, such as juniper boughs or berries, would be prohibited. Collection of dead and down wood for onsite use would also be prohibited. OHV's would be limited to designated roads and trails. Overnight camping would be prohibited inside the ACEC. The ACEC would be managed as VRM Class II.

Livestock grazing would continue based on existing permit stipulations and approved allotment management plans. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Alternative D

Under this alternative, 6,335 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -17). New rights-of-way in the ACEC would be avoided unless there are no other options. Acquisition of the 80-acre inholding from a willing landowner would be pursued. If acquired, it would be added to the ACEC and managed accordingly. The ACEC would be open to all mineral activity. Any fluid minerals activity would be subject to a no-surface-occupancy stipulation.

Livestock grazing would continue based on existing permit stipulations. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The existing wood cutting areas would be closed and future tree cutting for firewood, posts, or other uses; and gathering vegetative products, such as juniper boughs or berries, would be prohibited. Wood cutting areas could be established east of the east-side boundary road. Collecting down and dead wood for onsite camping use would be allowed. Camping would be limited to designated primitive camping areas. The ACEC would be managed as VRM Class IV. OHV's would be limited to designated roads and trails.

Alternative E

No ACEC/RNA would be designated under this alternative.

Management Direction by Alternative—Proposed Rahilly-Gravelly ACEC/RNA

Alternative A

Under this alternative, no ACEC would be designated. The area would be open to all mineral activity based on approval of a site-specific NEPA analysis and stipulations to protect biological and cultural resources. The area would be open to new rights-of-way. Livestock grazing would be managed according to the existing "Rahilly-Gravelly Allotment Management Plan." The area is in Allotment 212 which is grazed primarily from March through mid-September. Personal collecting of vegetative products including wood cutting would be allowed. Commercial collection would be considered on a case-by-case basis. The area would be open to OHV's. The northwest side of the area would be managed as VRM Class III and the rest of it would be VRM Class IV.

Alternative B

No ACEC would be designated under this alternative. Management would be the same as that described under Alternative A.

Alternative C

Under this alternative, 20,127 acres would be designated as an ACEC and a RNA (Maps SMA-3). The ACEC/RNA would be open to locatable mineral entry and open to leasable minerals subject to a no-surface-occupancy stipulation. It would be closed to the sale of minerals. New rights-of-way would be excluded from the ACEC/RNA except those necessary to access non-Federal land. Actions to acquire the adjacent private land from willing landowners would be initiated if such acquisition would enhance management of the relevant and important resources in the ACEC.

The high concentration of greater sage-grouse leks in the ACEC would be managed to maintain the continuity of greater sage-grouse habitat and to avoid disturbance during the breeding season.

Livestock use would continue based on existing permit stipulations and approved allotment management plans. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Of particular concern would be spring grazing of cultural plants (plants traditionally used by Native Americans). Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

OHV use would be limited to designated roads and trails. Tree cutting for firewood, posts, or other uses; and the commercial collecting of vegetative products, such as juniper berries, would be prohibited. Individual collection of vegetative products for personal use or traditional Native American use would be allowed. The ACEC would be identified as a traditional cultural property. The entire ACEC would be managed as VRM Class III.

Alternative D

Under this alternative, 19,648 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -18). The ACEC would be open to all mineral activities. Any leasable mineral activity would be subject to a no-surface-occupancy stipulation. New rights-of-way in the ACEC would be avoided unless there were no other options. Actions to acquire the adjacent private land from willing landowners would be initiated if such acquisition would enhance management of the relevant and important resources in the ACEC.

Livestock grazing would be managed the same as under Alternative C.

The high concentration of greater sage-grouse leks in the ACEC would be managed to maintain the continuity of greater sage-grouse habitat and to avoid disturbance during the breeding season.

OHV's would be limited to existing roads and trails. Management of wood cutting and vegetative products collecting, and VRM would be the same as described under Alternative C. The ACEC would be identified as a traditional cultural property.

Alternative E

Under this alternative no ACEC/RNA would be designated.

Management Direction by Alternative—Proposed Red Knoll ACEC (formerly Tucker Hill)

Management common to Alternatives A–D:
There are major noxious weed infestations, primarily medusahead, in the proposed ACEC. Noxious weeds would be treated in the area using integrated weed management techniques with an emphasis on treatment and rehabilitation of medusahead sites. A Greater Abert Weed Management Area is proposed in this area which would include all of the land in the proposed Red Knoll ACEC. If a weed management area is established, the plan that would be developed for it would be the direction for weed management activities inside this ACEC. If the weed management area is not developed, but the ACEC becomes established, weed management would occur according to the weed management direction common to all alternatives for the rest of the resource area.

Alternative A

The proposed ACEC would not be designated and management of the area would continue as at present. The area would be open to locatable mineral entry and to the sale or lease of minerals based on approval of a site-specific NEPA analysis with appropriate stipulations to protect or mitigate impacts to cultural and biological resources. Grazing would continue as currently managed. The north half of the area, Allotment 0408, is not grazed. The south half of the area in Allotment 0404 is grazed. Rights-of-way for utility lines, pipelines, or roads would be made available as needed based on an environmental assessment of impacts. Tree cutting for firewood, posts, or other uses, and the collection of vegetative material for personal or commercial use would be allowed. The entire area would be open to OHV use. The area would continue to be managed as VRM Class III and Class IV.

Alternative B

Under this alternative, the proposed ACEC would not be designated. The area would be managed as described under Alternative A.

Alternative C

A total of 11,588 acres would be designated as an ACEC (Map SMA-3). The ACEC would be entirely south of the existing Tucker Hill mining area. BLM would petition the Secretary of the Interior to withdraw the entire ACEC from locatable mineral entry. The ACEC would also be closed to sale or lease of minerals. New rights-of-way would be excluded except for any necessary to access non-Federal land. Actions would be pursued to acquire private inholdings from a willing landowner.

The entire ACEC would be closed to livestock grazing to protect cultural values and to help control further weed infestation. The ACEC would be identified as a traditional cultural property. Eligible cultural resource sites would be nominated to the NRHP.

Tree cutting for firewood, posts, or other uses, or the commercial collection of vegetative material would be prohibited. The collection of plants and vegetative material for individual use would be allowed.

OHV's would be limited to designated roads and trails. The entire ACEC would be managed as VRM Class II.

Alternative D

Under this alternative, 11,127 acres would be designated an ACEC (Maps SMA-4 and -19). As under Alternative C, the ACEC would exclude the Tucker Hill mining area. The southeast boundary of the ACEC would be set 100 feet back from existing county road right-of-way (Willow Creek Road) to allow maintenance of the road or additional right-of-way uses without impacting the ACEC.

BLM would petition the Secretary of the Interior to withdraw the northwest one-third of the ACEC (approximately 600 acres) from locatable mineral entry. This same area would be closed to the sale or lease of minerals. The southern two-thirds of the ACEC would be open to locatable mineral entry and to the sale or lease of minerals with stipulations to protect relevant and important resources. New rights-of-way in the ACEC would be avoided unless there are no other options.

Livestock grazing in the ACEC would continue based on existing permit stipulations. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Visual resources and OHV's would be managed as described under Alternative C. Wood cutting and the harvest of vegetative products would be managed as described under Alternative A.

Alternative E

No ACEC would be designated under this alternative.

Management Direction by Alternative—Proposed Spanish Lake ACEC/RNA

Alternative A

No ACEC would be designated under this alternative. The area would be open to OHV's. It would also be open to all mineral activity based on approval of a site-specific NEPA analysis. The area would be open to new rights-of-way and other realty actions. Present grazing management would continue. The area is in Allotment 213 which is grazed for approximately 1 month each February. The area would be managed as VRM Class IV.

Alternative B

No ACEC would be designated under this alternative. Management would be the same as that described under Alternative A.

Alternative C

Under this alternative, 4,699 acres would be designated as an ACEC and a RNA (Map SMA-3). The ACEC would be open to locatable mineral activity under a plan of operation. It would be closed to sale or lease of minerals. Rights-of-way, except to provide access to non-Federal land, would be excluded from the ACEC.

Livestock use would continue based on existing permit stipulations. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified,

existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced. The livestock watering pond in the middle of the lake would be rehabilitated.

OHV's would be limited to designated roads and trails. The ACEC would be managed as VRM Class III.

Alternative D

Under this alternative, 4,699 acres would be designated as an ACEC (Maps SMA-4 and -20). New rights-of-way in the ACEC would be avoided unless there are no other options. The ACEC would be open to all mineral activity.

The ACEC would be managed as VRM Class IV. All other management in the ACEC would be the same as described under Alternative C.

Alternative E

Under this alternative, no ACEC would be designated.

Management Direction by Alternative—Proposed Table Rock ACEC/RNA

Alternative A

Under this alternative, no ACEC would be designated. The area would be open to OHV's except for an existing 56-acre closed area. The area would be open to all mineral activity subject to approval of a site-specific NEPA analysis with stipulations to protect biological and cultural resources. Under the existing management framework plan, no new major rights-of-way would be placed within 1 mile of the area. Distribution lines would be allowed. The rights-of-way for existing communication sites and access road to the site would be retained and managed according to the respective right-of-way grants. Livestock grazing would continue as presently managed. The area is in two allotments. Allotment 714 encompasses most of the ACEC, but is currently not grazed. Allotment 708 includes the northwest portion of the ACEC and is grazed for a month in the spring.

The conservation agreement between BLM and USFWS for the protection and management of Cusick's buckwheat and snowline cymopterus would be completed and implemented. Collecting of vegetative products such as juniper boughs or berries would be allowed. Tree cutting for firewood, posts, or other uses would be prohibited. Collecting dead and down wood for onsite camping use would be allowed. Overnight camping would be allowed. The area would continue to be managed as VRM Class IV.

Alternative B

No ACEC would be designated under this alternative. Management would be the same as described under Alternative A.

Alternative C

Under this alternative, 5,891 acres would be designated as an ACEC and a RNA (Map SMA-3). The conservation agreement for the Cusick's buckwheat and snowline cymopterus would be completed and implemented.

New rights-of-way, except to provide access to non-Federal land, and other realty actions in the ACEC would be excluded. Actions to acquire the private property adjacent to the northeast corner of the ACEC from willing landowners would be initiated.

The ACEC would be open to locatable mineral activity but closed to the sale or lease of minerals. The ACEC would be closed to livestock grazing to protect RNA values. Fences would be installed as needed to keep livestock out of the area.

The area would be identified as a traditional cultural property. Tree cutting for firewood, posts, or other uses; and commercial gathering or collecting of vegetative products, such as juniper boughs or berries, would be prohibited. Collection of plants or vegetative products for individual or personal use would be allowed.

In the ACEC, OHV's would be limited to designated roads and trails, except for the 56-acre closed area. Recreation use would be limited to day-use only. Camping would be limited to a designated site outside the ACEC. The ACEC would be managed as VRM Class II.

Alternative D

Under this alternative, 5,138 acres would be designated as an ACEC and a RNA (Maps SMA-4 and -21). The western boundary of the ACEC would be set back 100

feet from the eastern edge of the county road right-of-way. The conservation agreement for Cusick's buckwheat and snowline cymopterus would be completed and implemented.

New rights-of-way would be allowed within existing rights-of-way. New rights-of-way outside the existing rights-of-way would be avoided unless there were no other options. Actions to acquire the private property adjacent to the northeast corner of the ACEC from willing landowners would be initiated.

The ACEC would be open for locatable and leasable minerals. Any geothermal exploration or development would be subject to a no-surface-occupancy stipulation. The ACEC would be closed to the sale of minerals.

Livestock use would continue based on existing permit stipulations. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Where adverse impacts are identified, existing livestock use would be adjusted using a variety of methods, including, but not limited to, fencing, reduction in livestock numbers, and changes in grazing season of use. Proposed range improvement projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

The ACEC would be identified as a traditional cultural property. OHV's would be limited to designated roads and trails except for the 56-acre closed area. Camping would be allowed in designated areas only. The ACEC would be managed as VRM Class II. Wood cutting or gathering vegetative products would be managed the same as described under Alternative C.

Alternative E

Under this alternative, no ACEC would be designated.

Wilderness Values

All alternatives would incorporate or comply with the management direction and protections provided by the Warner sucker biological opinion agreements, the "Recovery Plan for the Threatened and Rare Fishes of the Warner Basin and Alkali Subbasin;" the "Standards for Land Health for Lands Administered by the Bureau of Land Management in the States of Oregon and Washington;" and the "Interim Management Policy for Lands Under Wilderness Review" (1995).

Management Goal—*BLM-administered land acquired since the wilderness inventory and determined to have wilderness values would be included in adjacent wilderness study areas (WSA's). WSA's and WSA additions would be managed under the 1995 "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP).*

Rationale

Under FLPMA, wilderness preservation is part of BLM's multiple use mandate, and wilderness is recognized as part of the spectrum of resource values considered in the land use planning process. Under the wilderness review program, the existing designated WSA's are managed in accordance with BLM's IMP. The general standard for interim management is that land under wilderness review must be managed so as not to impair suitability for preservation as wilderness. Wilderness characteristics and values, described in section 2(c) of the "Wilderness Act of 1964" (Public Law 88-577) must be protected and enhanced in all WSA's. The initial task of identifying areas suitable for wilderness preservation has been completed as mandated in FLPMA section 603, and is documented in BLM's 1989 "Oregon Final Wilderness EIS" and 1991 "Wilderness Study Report for Oregon."

Lands acquired by the BLM since that time (3,043 acres via donation, exchange, or purchase) were not included in the initial inventory for wilderness suitability. Sections 201 and 202 of FLPMA provide for ongoing inventories of public land resources and identification of significant areas through the RMP process. If acquired parcels of land adjacent to WSA's are found recommended as suitable for wilderness designation, these areas would be included in the appropriate WSA and managed under authority of FLPMA sections 202 and 302. The IMP would apply to these areas while under wilderness consideration by Congress.

Monitoring

Monitoring and surveillance of the parcels of land added to existing WSA's would be ongoing to ensure compliance with IMP.

Management Common to All Alternatives

Management direction for all WSA's and ISA's is set under the 1995 wilderness IMP until such time as Congress makes a determination regarding wilderness designation. The wilderness IMP takes precedent over

all other management direction based on special designations such as special recreation management areas or ACEC's when these designations overlap, unless management of these areas is more restrictive than the IMP, in which case the more restrictive management would be followed. Management of any congressionally designated wilderness areas would be set in legislation. Management direction for any WSA's not designated by Congress and released from WSA status would be based on existing RMP management direction.

According to the IMP, the use in WSA's of "mechanical transport, including all motorized devices as well as trail and mountain bikes, may only be allowed on existing ways and within open areas that were designated prior to the passage of FLPMA (October 1976)." Existing ways are those that existed at the time of the wilderness inventory. The wilderness inventory was based in part on road information from published USGS 7.5 minute quadrangle maps. Therefore, "existing roads and ways" within WSA's are defined as those which appear on the pre-1990 published USGS topographic maps.

Management Direction by Alternative

Alternative A

All lands acquired adjacent to or within WSA's since the 1991 "Wilderness Study Report for Oregon" are required to be assessed for wilderness values. A number of such areas have been assessed to date. This assessment has found that some of lands meet the criteria for identification as a WSA. However, these lands can only be managed under the wilderness IMP if they go through the land planning process. Under Alternative A, a land use plan amendment would need to be completed to accomplish this.

Alternative B

Land acquired within or adjacent to lands identified in the1991 "Wilderness Study Report for Oregon" would not be added to existing WSA's and would not be managed under the IMP, even though they may meet the WSA criteria.

Alternatives C, D, and E

All acquired lands adjacent to or within WSA's have been assessed for wilderness characteristics. Under these three alternatives, those lands possessing wilderness characteristics and meeting the criteria for identification as a WSA would be included in the adjacent WSA and managed under the IMP to protect its wilderness values. Approximately 1,194 acres of acquired lands determined to have wilderness characteristics would be added to the following WSA's: Fish Creek Rim WSA—397 acres; Guano Creek WSA—604 acres; and Abert Rim WSA—193 acres. See Appendix J and Maps SMA-7, -13, and -16, for the wilderness study process and location of these acquired lands, respectively.

Wild and Scenic Rivers

Management Goal—*Protect and enhance outstandingly remarkable values of rivers determined to be administratively suitable for potential inclusion in the national wild and scenic river system until Congress acts.*

Rationale

The "National Wild and Scenic Rivers Act" (Public Law 90-542 and amendments), section 1(b), states that "certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations." Section 5(d) requires Federal agencies to consider potential wild, scenic, and recreational river areas in all planning for the use and development of water and related land resources. Section 10(a) describes the basic management requirement of protecting and enhancing the values that caused the river to be included in the national wild and scenic river system. In accordance with BLM policy, all eligible rivers were evaluated for suitability. The planning determination of suitability provides the basis for any decision to recommend legislation. Factors to be considered (see section 4[a] of the "National Wild and Scenic River Act" in the suitability determination include: the current status of land ownership and use in the area; the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the area were included in the national WSR system, and the values which would be foreclosed or diminished if the river is not protected as part of the national WSR system; other agencies, organizations or public interested in designation or nondesignation; administrative costs; ability of the agency to manage and/or protect the river area; historic or existing rights.

An inventory of rivers in the LRA determined that three rivers were eligible for further study: Guano Creek, Twelvemile Creek, and Honey Creek (see Appendix J2 for the inventory assessment). Subsequent field checking of Guano Creek revealed that the last 1 mile of the creek above the Shirk Ranch has several major diversions and channels for irrigation use. These structures do not meet the "free-flowing" definition of the "National Wild and Scenic River Act," and therefore, the last mile of the creek would not be included in the assessment. Since the Shirk Ranch is within this stretch, the outstandingly remarkable cultural value of the assessment is also dropped. Guano Creek is still eligible based on its vegetation communities.

Monitoring

Monitor use and oustandingly remarkable values within administratively suitable rivers to ensure protection and enhancement of oustandingly remarkable values consistent with the "National Wild and Scenic River Act."

Management Common to All Alternatives

Provide interim protection of the oustandingly remarkable values of eligible and administratively suitable rivers while awaiting a determination by Congress. Refer to Appendix J3 for interim management policy and guidelines. Acquisition of non-Federal lands along the river corridors would be through voluntary willing sellers or exchange proponents, and would be added to eligible and suitable rivers.

Under Alternatives B, C, and D, the visual resources for Honey and Twelvemile Creeks would be managed as VRM Class II, and Guano Creek would be managed as VRM Class I because it is located within the Guano Creek WSA. If Guano Creek is not congressionally designated a wilderness, the VRM class for the Guano Creek corridor would revert to Class II.

Management Direction by Alternative

Alternative A

None of the eligible streams would be recommended administratively suitable for potential designation by Congress as WSR's.

Alternative B

Same as under Alternative A.

Alternative C

Approximately 6.6 miles on Twelvemile Creek and 5.6 miles of Honey Creek would be recommended administratively suitable for potential designation by Congress as a WSR (Table 2-35 and Map R-8), with a tentative classification as scenic. Approximately 10.6 miles of Guano Creek would be recommended administratively suitable for potential designation by Congress as a WSR, with a tentative classification as wild. Management guidelines and standards for scenic classification as listed in the "Oregon/Washington Management Guidelines and Standards for National Wild and Scenic Rivers" would be followed while awaiting a determination by Congress.

Alternative D

Approximately 6.6 miles on Twelvemile Creek would be recommended administratively suitable for potential designation by Congress as a WSR (Table 2-35 and Map R-8 and SMA-22) with a tentative classification as recreational. Guano Creek and Honey Creek would not be recommended suitable for designation in the national WSR system. Management guidelines and standards for wild, scenic, and recreational classifications listed in the "Oregon/Washington Management Guidelines and Standards for National Wild and Scenic Rivers" would be followed while awaiting a determination by Congress.

Alternative E

None of the eligible streams would be administratively suitable for potential designation by Congress as WSR's.

Cultural and Paleontological Resources

Management Goal 1—*Preserve and protect cultural resources in accordance with existing laws, regulations, and Executive orders, in consultation with Native Americans.*

Rationale

The BLM is required by law, regulations, and Executive orders to manage cultural resources in such a fashion that they would be preserved and protected from destruction, and that the appropriate uses would be made of such resources. Law, regulations, and

Executive orders further require that such management be coordinated with the appropriate Native American Tribes and individuals.

Monitoring

Monitoring of the condition of sites on a regular basis would be required to establish a baseline to determine the condition of known sites of significance such as NRHP listed or eligible sites. It would not be practical or possible to monitor all sites within the district due to the large number of known sites.

Actions Common to All Alternatives

All management actions on public lands and private land projects which are federally funded, permitted, or assisted would require completion of section 106 of the "National Historic Preservation Act" regulations. This would consist of a literature review, a site survey on the ground to determine the presence or absence of sites, and site evaluation in consultation with Native Americans as appropriate and with the State Historic Preservation Officer (SHPO) as appropriate.

All sites which have currently been identified as well as sites identified in the future would be evaluated for placement in one of four use categories as specified in BLM Manual 8110.4. These four uses are as follows:

1) *Conservation for future use:* This category places a site in protection from destruction with the intent to have it available at an unspecified date in the future for use in research or public interpretation.

2) *Public use:* Sites placed in this category would be used for recreation, public interpretation, education, etc.

3) *Experimental use:* Sites placed in this category would be used in scientific research. Such use may result in the complete consumption of the site in some cases. Site may be placed in public use as a result of the research which is conducted.

4) *Discharged sites:* These are sites which no longer exist or have been so damaged that they have no value of any kind. Sites may have been destroyed by erosion, consumption in research, or through destruction caused by humans.

Alternative A

To protect against illegal artifact or fossil collecting, site or fossil excavations, and site or fossil vandalism, the listed, eligible, or potential NRHP sites and locations known to contain large numbers of sites would be patrolled regularly. This would include the subbasins of Warner Valley, Abert Lake, Summer Lake, Christmas Valley, and Fort Rock. In addition, the uplands surrounding these basins would also be patrolled.

A monitoring plan would be developed to evaluate the success of cultural resource protection and to provide a baseline for the present condition of sites and determine where stabilization and restoration is needed. Other uses would be limited as necessary to preserve and protect cultural resources. A regular schedule of meetings with local and regional Native American Tribes for consultation on the preservation and protection of sites would be established.

Buildings and structures on the Shirk Ranch property located in Guano Valley would be stabilized or restored.

Alternative B

Same as Alternative A, except the following. Buildings and structures on the Shirk Ranch property located in Guano Valley would be restored and plans for administrative and recreation use of the property would be developed.

The OHV closure in the Fossil Lake paleontological area would be maintained, and exposed fossils would continue to be collected from the location. An interpretive site for public recreational use at the location would be developed.

Alternative C

Same as Alternative A, except the following. The buildings and structures at Shirk Ranch in Guano Valley would be restored.

The Fossil Lake and Sand Dunes areas would be closed to OHV's in order to protect exposed fossils. Year round paleontological resource monitoring to prevent collection of exposed fossils would be initiated.

Alternative D

Same as Alternative C, except that the historical buildings and structures at Shirk Ranch in Guano Valley would be stabilized.

The OHV closure at Fossil Lake would be enlarged to

9,379 acres. Paleontological resource monitoring to determine damage to and collection of exposed fossils would be initiated.

Alternative E

To protect against illegal artifact and fossil collecting, archaeological site or fossil site excavation, and archaeological site or fossil vandalism, the listed, eligible or potential NRHP sites and locations known to contain large numbers of sites would be patrolled regularly.

Management Goal 2—*Increase the public's knowledge of, appreciation for, and sensitivity to cultural resources, Native American issues, and paleontological resources.*

Rationale

The BLM is required by law to preserve and protect cultural and paleontological resources. In order to do so, the public must be aware of their values and the impact which their activities have upon them. Cultural and paleontological resources are fragile and irreplaceable when damaged or destroyed by actions of the public. Through vandalism and natural erosion, these resources are disappearing. If the public understands the effects of their actions and feels it has equity in the Nation's cultural and natural history heritage, the resources would be appreciated and better protected from vandalism.

Monitoring

Develop and monitor presentations to the public, educational brochures, interpretative materials, informational materials, scientific research collections and materials, and informational displays for the public and scientific communities.

Actions Common to All Alternatives

Actions would be initiated to develop public appreciation and protection through public education of the values and importance of cultural resources. All interpretation projects would be done in consultation with Native Americans, and implemented only if it would not impact the values which they are concerned with at the site.

Alternative A

Cost-share programs with universities, museums, and researchers, and volunteers to inventory, analyze, and research the cultural resources within the resource area would be continued. Regular consultation with Native American Tribes on all matters dealing with use, protection, and preservation of cultural resources within the resource area would continue.

Alternative B

Same as for Alternative A, except on- and offsite interpretation of archaeological/paleontological sites which have educational and recreational values would be developed as long as such work does not contribute to the deterioration or destruction of the resources being interpreted. Work would be conducted with museums of the region, as well as nationally, for the creation of displays about the resources of the area. In addition, work would be done with researchers for the creation of brochures and books on the archaeology and paleontology of the resource area.

Interpretive sites and publications as described above would be developed for the Shirk Ranch Historic Site, the Fossil Lake paleontological site, the archaeological resources of the Fort Rock Basin and the Warner Valley region of the resource area.

Alternative C

Actions as outlined under Alternative A would continue. Public interpretation of sites would be developed but only if it would not impact the site or would improve its condition.

Alternative D

Management actions would be the same as described under Alternative C. In addition, public education programs which would increase public awareness of the need to preserve and protect cultural resource sites would be developed.

Alternative E

Public interpretation and educational programs that do not involve onsite work or require any visitation of sites in the field would be developed.

Management Goal 3—*In consultation with local Native American Tribes, take actions, including designating areas of critical environmental concern (ACEC's), to protect traditional religious sites, landforms, burial sites, resources, and other areas of interest. Nominate as traditional cultural properties those areas that qualify.*

Rationale

It is Federal policy required by laws, regulations, and Executive orders to consult with and coordinate BLM activities with Native American Tribes so that their rights and interests are taken into account when land use decisions are made. In addition, American Indian traditions and traditional uses are addressed. Specifically, the agency must comply with the "National Historic Preservation Act," the "Native American Graves Protection and Repatriation Act," the "American Indian Religious Freedom Act," regulations 36 CFR 800, section 106 and 110, and Executive Order 13007 (Sacred Sites).

Monitoring

Develop procedures to track consultation and document all written, telephone, electronic, and in-person communications; and review yearly for adequacy. Develop on-the-ground monitoring of identified sites to determine condition, impacts, deterioration, and use of such sites.

Actions Common to All Alternatives

Consultation with Native American Tribes would be documented under all alternatives.

Ownership of the West Goose Lake Reinterment Site (approximately 40 acres) and the Adel Paiute Cemetery (approximately 10 acres) would be transferred to the local Tribes.

Alternative A

All land-disturbing activities within identified Native American religious sites or traditional cultural propertys's would be designed to eliminate or minimize adverse impacts to cultural use areas. Proposed projects or actions would be modified to avoid the site or area, avoid time of use by Native American groups, or be eliminated altogether. Religious sites and traditional cultural propertys would be managed for continued use by Native Americans. Native American religious sites and traditional cultural propertys would be retained in Federal ownership. Native American requests to practice traditional activities on public lands would be considered on a case-by-case basis and would be allowed where practical and appropriate. All treaty rights and trust responsibilities as they apply to public lands within the resource area would be honored. Activity plans for Native American traditional use areas, when identified in consultation with affected Tribes, would be developed.

Alternative B

Management actions would be the same as for Alternative A, except areas would be set aside for special management only if doing so would not restrict other uses of same area. No areas would be removed from mineral entry

Alternative C

The areas and acreage listed below would be designated as ACEC's to protect cultural resource values and traditional use areas. Eligibility of these areas as traditional cultural propertys would be determined.

Red Knoll	11,588
Table Rock	5,891
Abert Rim Addition	18,019
High Lakes	40,095
Hawksie-Walksie	17,339
Connley Hills	3,599
Rahilly-Gravelly	20,127
Fish Creek	8,725
Total	125,383

Proposed specific management direction for each of these areas under this alternative is described in the ACEC section.

Alternative D

Same as for Alternative C, except that the acreage of the ACEC's listed below would be less and management direction could vary. Proposed specific management direction for each of these areas under this alternative is described in the ACEC section.

Red Knoll	11,127
Table Rock	5,138
Abert Rim Addition	18,019
High Lakes	36,755
Rahilly-Gravelly	19,648
Hawksie-Walksie	17,339

Connely Hills	3,599
Fish Creek	8,725
Total	120,350

Alternative E

No ACEC's would be designated. Natural processes would be allowed to occur on all sites. Only management and uses required by law, regulations, and Executive orders would be allowed.

Management Goal 4—*In order to fulfill trust responsibilities with Tribal Peoples, manage public land to maintain, restore, or enhance plant community health and cultural plants. Identify traditional ecological knowledge with humans as part of the ecosystem and maintain habitat integrity with sustainable yields at a landscape level.*

Rationale

During the ICBEMP process, the concerns of American Indian peoples were analyzed—specifically their relationships with the natural environment and trends regarding agency relations with the project's affected Tribal Peoples. The legal status of Tribal Peoples, the sovereignty of Tribal governments, and the nature of reserved Tribes rights merit separate attention from the general public's concerns over ecosystem management. The BLM management actions affect resources and areas of concern to Tribal Peoples, and the Federal government holds certain trust responsibilities and obligations to Tribal groups based on various legal agreements such as BLM 8100, Information Bulletin OR 2000-095, Executive Order 1307, the "American Indian Religious Freedom Act," the "Native American Graves Protection and Repatriation Act," 36 CFR 800 section 106, and the "National Historic Preservation Act." There are four recognized Tribes that have interest in the Lakeview area: Burns Paiute, Fort Bidwell Paiute, Warm Springs Confederated Tribes, and the Klamath Tribes. The rights retained by Tribes are viewed by them as an assurance by the U.S. Government to allow for the continuation of traditional land uses. Thus, what is reserved supports a way of life for Indian communities, not just resource uses.

The importance of native plants has received relatively little recognition compared to other native resources. Plants continue to be valued and their parts used for purification, ceremonial, subsistence, commercial, and medicinal purposes and for creating objects of personal use, trade, gift-giving, or sale. Cultural plant lists and plant community/habitats have been listed and given significance by Tribal Peoples. Also, the aquatic/terrestrial world has cultural significance to Tribes beyond its value as a source of food, medicine, textiles and other material resources. Its cultural significance is much more complex, involving social values and meaning that intertwine traditional societal, political, religious, and economic areas of modern native cultures (USDA-FS and USDI-BLM 1996h).

In order to more effectively protect Tribal interests under ICBEMP, certain guidelines were developed between the Tribal Peoples and the Federal agencies concerning cultural plants and communities:

"Through treaties with the Federal government and regulatory acts signed over the past 30 years, Indian Nations have reserved rights and recognized interests to harvest a broad range of native plant and animal species. Therefore, sustainable harvest levels of the various species should be a management goal. Availability of these species is considered by Indian governments a trust responsibility of the Federal government. Inadequate quantities can lead to substantial effects on community well-being because numerous social activities center on the harvest, preparation, and consumption of the resources. This involves both the occurrence and access to the relevant resources. Occurrence of culturally important plant species may be measured through linkage with existing dominant overstory categories or associated soil types. Degree of access is determined by judging the potential effects that a number of anticipated impediments may be posed by differing management actions."

Plant communities that have cultural importance and value were identified in the process of consultation between the ICBEMP planners and Tribal Peoples; these plant communities are labeled "cultural plant ethno-habitats." These communities were rated for vulnerability and viability. In order that resources can be protected, the locations of these plants are not identified except in areas where they are protected, such as in ACEC's (Table 2-33) and in ethno-habitats (habitats defined by Tribal people as having human importance). There is great concern by Tribal Peoples, anthropologists, botanists, and some land managers of Federal lands to protect the habitats where cultural plants are located. One conclusion from ICBEMP analysis also has importance in the Lakeview area: "Tribal plants occurring in nonforested habitats are most at risk for decreases in habitat that may influence continued harvestability." Nonforested ethno-habitats of critical concern in the LRA include tall sagebrush, low sagebrush scablands, wet meadows, and riparian zones.

Cultural plants are defined as those plants important to Tribal groups, both past and present, for subsistence, economic, and ceremonial purposes. Various historical factors since European contact have affected the availability of these plants for Tribal use within the planning area. Noxious weeds; the exclusion of fire; and substantial impacts from grazing, timber harvest, and road building, among other factors, have all contributed to declines and dislocations in many of the plant species important to Tribes in eastern Oregon (Hanes 1999).

Monitoring

Cultural plant lists and their respective plant communities (ethno-habitats) are considered in all NEPA procedures and botanical clearances. Also, in the proposed ACEC's cultural plants/ethno-habitats are given a high priority. These plants would be evaluated over time to determine increase/decrease of number and seasonality of possible use of these resources. These resources are reported and discussed with the cultural heritage representatives at the various Tribes. Also, western juniper woodlands are an important part of the Tribal heritage both for cultural and religious properties and for material values. Western juniper management would balance both Tribal needs and commercial uses.

Alternative A

In the NEPA process, cultural plants would be inventoried to insure that management actions on the land do not contribute to the declines of cultural plants. Meetings would be arranged with Tribal Peoples to discuss management actions. Field trips with Tribal elders would be arranged to view cultural plant areas and other area for management actions. Surveys would be conducted as needed for cultural resources related to western juniper woodlands.

Alternative B

Same as for Alternative A

Alternative C

Plant resources, especially western juniper woodlands, would be managed for desired range of conditions by using a mix of protection, restoration, and enhancements measures. These measures may include prescribed fire and special considerations for wildland fire management. Old growth western juniper would be maintained or enhanced (see Forest and Woodlands section). Tribal resource people would be encouraged to contribute their concerns for management of all cultural plants.

Alternative D

Same as for Alternative C

Alternative E

Natural processes would be allowed to operate; however, wood cutting or bough collecting for commercial purposes would be prohibited.

Human Uses and Values

Management Goal—*Manage public lands to provide social and economic benefits to local residents, businesses, visitors, and future generations.*

Rationale

Through the planning process the Lakeview District would select a course for future actions designed to meet existing legal requirements and other direction of the agency.

Historically, commodity values on public lands have been made available to private individuals or businesses through sales, permitting, or other methods. The Federal government collects revenues when commodities are used. These commodities also generate private economic activity in the local, regional, national, and in some cases international economies.

Public lands also provide or contribute to numerous environmental amenities, such as clean water, scenic quality, and recreational opportunities. These amenities enhance local communities as places to live, work, or visit. Public lands also attract visitors to the area, many of whom purchase goods and services that generate local economic activity.

Business activities of Federal agencies also generate economic activity in the local, regional, and national economies as both an employer and purchaser of goods and services.

Federal lands also contribute to local governments where they are located. Many commodity programs include provisions to share collections with local governments. Payments-in-Lieu-of-Taxes are also made to compensate counties because Federal lands are

exempt from local property taxes. Continuation of programs limits disruption of existing economic structures. Guidance within the plan defines the amount of economic opportunity in the future, especially related to mining and recreation.

Monitoring

Use BLM records to determine the amounts of commodity uses (i.e., AUM's, tons of minerals, board feet of special forest and range products, etc.). Monitor employment in related industries using public information sources. Use BLM budget information to project spending to meet environmental quality. Determine amounts spent on new facility construction.
Use the recreation management information system and other site-specific measures to determine visitor use levels. Track local versus nonlocal contracts and purchases using BLM procurement records. Track BLM employment levels using payroll records.

Management Common to All Alternatives

The following objectives/actions which contribute to achieving the management goal would be the same for all alternatives.

- Provide predictable and sustainable levels of commodity outputs.
- Meet subsistence needs of Tribes and Tribal communities to the greatest extent practicable.
- Provide natural resource amenities on public lands that enhance local communities as places to live, work, or visit (this could include water quality, scenic views, recreation sites, wildlife viewing, hunting, and fishing).
- Protect special areas with unique natural resource values for the enjoyment of future generations (this could include habitats of endangered species).
- Target government business activities associated with public land management to the local economies to the extent permitted by the existing authorities (would need to develop a monitoring plan to evaluate if local versus nonlocal government spending changes over time).

In its resource management planning, the BLM selects a balance between current and future generations, local and regional and national interests, commodity uses and natural values, and physical and biological and social-economics.

Management Direction by Alternative

Alternative A

Commodity use would continue at existing levels to contribute to stability in the local livestock, mining, and timber industries.

Natural resource amenities would continue to be provided at levels that meet or exceed existing legal requirements. Where needed, improve environmental quality to meet or exceed requirements.

Existing facilities (roads, recreation sites, interpretive sites, and range improvements) would continue to be managed to facilitate commodity uses and continued access and availability of natural resource amenities. Continue existing management direction when determining the need for additional facilities.

Anticipated increases in demand for recreational opportunities would be addressed by implementing improvements in the Warner Wetlands Special Recreation Management Area as identified in the existing plan. Management of the Sunstone Collection Area would continue under existing guidelines. Commercial recreation opportunities would be encouraged through the authorization of special recreation permits.

Existing special areas would be protected.

Existing business practices would be continued.

Alternative B

Availability of Federal forage available for use through the permit process would be increased. The availability of sunstone-bearing areas available for mining claim location would be increased. Maintain the existing level of opportunity for mineral exploration and development. Increased commodity availability would likely contribute to the expansion of the local recreation, livestock, and mining industries.

Natural resource amenities would continue to be provided at levels that meet or exceed existing legal requirements. Where needed, improve environmental quality to meet or exceed requirements using administrative or project- related solutions which minimize impacts to commodity production and public uses.

Existing facilities (roads, recreation sites, interpretive

sites, and range improvements) would continue to be managed to facilitate commodity uses and continued access and availability of natural resource amenities. Additional facilities would be developed as needed to support commodity uses consistent with natural resource objectives.

Anticipated increases in demand for recreational opportunities would be addressed by designating the North Lake County Special Recreation Management Area to enhance tourism and recreation opportunities. This includes expanding existing developed and undeveloped recreation sites to accommodate increased visitation and developing partnerships to expand tourism and recreation. Implement improvements in the Warner Wetlands Special Recreation Management Area as identified in the existing plan and continue management of the Sunstone Collection Area under existing guidelines as in Alternative A. Commercial and competitive use opportunities would be emphasized through the issuance of special recreation permits.

Existing and newly designated special areas would be protected.

Implement business practices which promote participation by local vendors and purchasers. This would include offering contracts that are diverse in size, type, term, and season. Operate within existing legal, regulatory, and administrative authorities.

Alternative C

Commodity uses would be reduced from existing levels to increase the level of protection for natural values. New commodity use levels would be established that could be maintained through time to contribute to stability in the local livestock, mining, and timber industries.

Natural resource amenities would continue to be provided at levels that meet or exceed existing legal requirements. Where needed, environmental quality would be improved to meet or exceed requirements using administrative or project related solutions which would protect or improve natural values.

Existing facilities (roads, recreation sites, interpretive sites, and range improvements) would continue to be managed to facilitate commodity uses and continued access and availability of natural resource amenities. Eliminate or develop alternatives for existing facilities which negatively impact natural values.

Anticipated increases in demand for recreational opportunities would be addressed by designating the North Lake County Special Recreation Management Area to emphasize undeveloped, dispersed recreation opportunities and protect natural values. Minimal facilities would be constructed and maintained under this alternative. Management of the Warner Wetlands Special Recreation Management Area would be modified to further emphasize protection of natural and cultural values. Management of the Sunstone Collection Area would continue under existing guidelines as in Alternative A. Issuance of special recreation permits would be limited.

New special areas would be designated and existing special areas would be protected.

Business practices would be implemented that promote participation by local vendors and purchasers. This includes offering contracts that are diverse in size, type, term, and season. Operate within existing legal, regulatory, and administrative authorities.

Alternative D

Commodity use would be reduced from existing levels to increase the level of protection for natural values. New commodity use levels would be established that could be maintained through time to contribute to stability in the local livestock, mining, and timber industries.

Natural resource amenities would continue to be provided at levels that meet or exceed existing legal requirements. Where needed, improve environmental quality to meet or exceed requirements using administrative or project-related solutions which minimize impacts to commodity production and public uses while protecting natural values.

Existing facilities (roads, recreation sites, interpretive sites, and range improvements) would continue to be managed to facilitate commodity uses and continued access and availability of natural resource amenities. Eliminate or develop alternatives for existing facilities which negatively impact natural values.

Anticipated increases in demand for recreational opportunities would be addressed by designating the North Lake County Special Recreation Management Area to emphasize undeveloped, dispersed recreation opportunities and protect natural values. Minimal facilities would be constructed and maintained under this alternative. Implementation of improvements in

the Warner Wetlands Special Recreation Management Area as identified in the existing plan and continued management of the Sunstone Collection Area under existing guidelines as in Alternative A. Special recreation permits would only be issued on an as-need basis to meet demand while protecting cultural and natural values.

New special areas would be designated and existing special areas protected.

Business practices that would promote participation by local vendors and purchasers would be implemented. This includes offering contracts that are diverse in size, type, term, and season. Operate within existing legal, regulatory, and administrative authorities.

Alternative E

Commodity uses would be eliminated on BLM-managed lands. This would likely contribute to the contraction and instability of the local livestock, mining, and timber industries. It is unlikely that these industries would be completely eliminated because of the availability of these commodities on private lands and other public lands in the local area.

Natural resource amenities would continue to be provided at levels that meet or exceed existing legal requirements. Where needed, improve environmental quality to meet or exceed requirements using administrative or project-related solutions which emphasize elimination of commodity production and public uses to protect natural values.

Minimal levels of existing facilities (roads, recreation sites, and interpretive sites) would be maintained to protect human health and safety and to honor existing rights-of-way agreements. Alternatives would be developed for existing facilities that would negatively impact natural values. Eliminate and rehabilitate facilities no longer needed.

Anticipated increases in demand for recreational opportunities would be addressed by deemphasizing tourism opportunities. Recreation would be focused toward undeveloped types of activities while assuring a high level of protection of natural and cultural values. No special recreation permits would be issued for commercial recreational uses. Site rehabilitation or closure would be favored if resource values are being degraded beyond acceptable levels.

Special areas would be eliminated and no new special areas would be designated.

The overall number and value of contracts offered would be reduced. Business practices would be implemented that would promote participation by local vendors and purchasers. This includes offering contracts that are diverse in size, type, term, and season. Operate within existing legal, regulatory, and administrative authorities.

Air Quality

Management Goal—*Meet the national ambient air quality standards as described in the "Clean Air Act" (CAA) and follow the direction and requirements of the Southcentral Oregon Fire Management Partnership.*

Rationale

Smoke is a factor that may affect a land manager's ability to use larger and more frequent wildland fire for restoration and maintenance of fire-dependent ecosystems.

The CAA requires Federal agencies to comply with all Federal, state, and local air pollution requirements. The CAA also requires each state to develop a state implementation plan to ensure that the national ambient air quality standards are attained and maintained for the criteria pollutants. The ODEQ is responsible for producing the state implementation plan, but delegates the smoke management portion to the Oregon Department of Forestry (ODF). As part of the state implementation plan, ODF developed instructions and requirements for wildland and prescribed fire emissions in the smoke management plan. Federal agencies are required to ensure that their actions conform to state implementation plans.

The national ambient air quality standards are described in the CAA. The national ambient air quality standards have been established for six pollutants. Of these six criteria pollutants, natural resource management activities largely affect only one—the production of particulate matter. However, most particulate matter of concern is produced from fire and most of this is less than 10 micrometers (PM10) in diameter, which is the size class that is regulated. Because fire and smoke are a natural part of forest and rangeland ecosystems, PM10 produced from fire does not seriously affect these ecosystems. However, it does have effects on human health.

Land managers and the public must make choices regarding prescribed fire and wildland fire use emissions versus emissions from wildland fires. Land managers have little control over where, when, and how much smoke is put into the air during wildland fires. Through prescribed fire, smoke levels can be better managed. For example, air quality can be somewhat diminished in the short term so that the probability is decreased of violating air quality standards in the long term. Although some of the alternatives call for a significant increase in emissions from prescribed fire and wildland fire use, these emissions would be mitigated to provide for public health and safety.

Monitoring

An emissions information system (FASTRACS) is used in Oregon to quantify prescribed fire emissions and to track changes in emission productions within the State. Federal land managers have an obligation to complete smoke management reports and apply appropriate mitigation measures to reduce potential impacts on air quality (EPA 1992).

There is an air quality monitoring network developed for Oregon that is used to determine whether the national ambient air quality standards are met. Monitors are located in Klamath Falls yearlong, and in Lakeview for the winter months. This monitoring network would determine background pollution levels which can help measure emissions increases during fire events.

Management Direction by Alternative

Alternative A

An average of 5,000 to 20,000 acres would be burned per year using prescribed fire.

Alternative B

Under this alternative, prescribed fire and wildland fire use for achieving resource management objectives would be limited to 64,000 acres per year.

Alternative C

Under this alternative, prescribed fire and wildland fire use to achieve resource management objectives would be limited to 64,000 acres per year. Ideally, much less would be burned, but this would enable achieving landscape-scale objectives in years when those opportunities were available.

Alternative D

Under this alternative, prescribed fire and wildland fire use to achieve resource management objectives would be limited to 480,000 acres per year. Over a 10-year period, using prescribed fire and wildland fire use would be limited to 1,120,000 acres.

Alternative E

Prescribed fire would not be used. Natural fire processes would be allowed to operate in the ecosystem.

Fire Management

Management Goal 1—*Provide an appropriate management response on all wildland fires, with emphasis on firefighter and public safety. When assigning priorities, decisions would be based on relative values to be protected commensurate with fire management costs.*

Rationale

Protection of human life (firefighter and public safety) is the highest priority during a wildland fire. Once firefighters have been assigned to a fire, their safety becomes the highest value to be protected. Property and natural and cultural resources are lower priorities.

The “Federal Wildland Fire Management Policy and Program Review” (1995) acknowledges that fire is a critical natural process and must be reintroduced into the ecosystem on a landscape scale. Wildland fire management decisions are based on approved fire management and activity level plans that are tiered to this RMP using the best available science. The policy further emphasizes that for natural ignitions (i.e., lightning caused), a manager must have the ability to choose from the full spectrum of fire management actions—from prompt suppression to allowing fire to function in its natural ecological role. The “Interior Columbia Basin Supplemental Draft Environmental Impact Statement” (USDA-FS and USDI-BLM 2000) states that wildland fire management strategies and suppression activities should minimize damage to long-term ecosystem function, and should emphasize protection, restoration, or maintenance of key habitats.

Monitoring

Monitoring would determine whether suppression strategies, practices, and activities are meeting safety standards and are meeting resource management objectives and concerns.

Management Common to All Alternatives

The 1998 fire management plan would be revised for the LRA within 2 years of completing the RMP. The fire management plan would prescribe the appropriate management response, including full suppression and modified suppression, throughout the resource area. It would also identify conditions and potential locations for wildland fire use and for prescribed fires, as well as other factors pertaining to fire management in the LRA.

Management Direction by Alternative

Alternative A

Provide for an appropriate management response of initial attack and full suppression on all wildland fires occurring outside of the Fort Rock Fire Management Area. For the Fort Rock Fire Management Area, wildland fires may be managed using limited suppression activities; this includes monitoring wildland fires that occur within the wildland fire use area boundaries. Use natural and human-created barriers (i.e., roads) as available for control lines. Use of heavy equipment in ACEC's, WSA's and RNA's would be avoided and would require line officer approval. If used, heavy equipment would be restricted to existing roads and trails. Use of retardant would be allowed within these areas for initial attack. Retardant use during extended attack would be considered as a part of the wildland fire situation analysis, considering the resource values at risk and public and firefighter safety.

Alternative B

Provide for an appropriate management response of initial attack and full suppression on all wildland fires threatening commodity areas. Use natural and human-created barriers (i.e., roads) as available for control lines. The use of surface-disturbing equipment and fire retardant in WSA's, ACEC's and RNA's would be avoided. Exceptions may be granted by the field manager to protect public and firefighter safety, other Federal, state and private property, and commodity areas. During times of multiple ignitions and limited suppression resources, place highest priority on suppression resources to protect commodity areas from wildland fire. Use of heavy equipment in ACEC's, WSA's and RNA's would be avoided and would require line officer approval. If used, heavy equipment would be restricted to existing roads and trails. Use of retardant would be allowed within these areas for initial attack. Retardant use during extended attack would be considered as a part of the wildland fire situation analysis, considering the resource values at risk and public and firefighter safety.

Alternative C

Provide for an appropriate management response utilizing the full range of suppression options from active suppression to confining wildland fire spread by employing direct and indirect actions and use of natural topographic features, human-created barriers (i.e., roads), fuel, and weather factors. If the fire is achieving resource benefits, such as fuel reduction or restoring natural process to rangelands, the fire would be managed using a confinement strategy, allowing the fire to burn up to defendable natural or human-created barriers. No particular emphasis would be placed on protecting commodity areas. Use of heavy equipment in ACEC's, WSA's and RNA's would be avoided and would require line officer approval. If used, heavy equipment would be restricted to existing roads and trails. Use of retardant would be allowed within these areas for initial attack. Retardant use during extended attack would be considered as a part of the wildland fire situation analysis, considering the resource values at risk and public and firefighter safety.

Alternative D

Provide for an appropriate management response of initial attack and full suppression on all wildland fires threatening other Federal, state, and private property, commodity areas, or other sensitive areas such as T&E species and habitat, and cultural sites. However, where the fire can achieve resource benefits, consider confining wildland fire spread by employing direct and indirect actions and use of natural topographic features, human-created barriers (i.e., roads), fuel, and weather factors. Use of heavy equipment in ACEC's, WSA's and RNA's would be avoided and would require line officer approval. If used, heavy equipment would be restricted to existing roads and trails. Use of retardant would be allowed within these areas for initial attack. Retardant use during extended attack would be considered as a part of the wildland fire situation analysis, considering the resource values at risk and public and firefighter safety.

Alternative E

Provide for an appropriate management response emphasizing initial attack, full suppression in instances only to protect human life, and other Federal, state, or private property. For wildland fires not threatening human life or other Federal, state, or private property, spend a minimal amount of time and effort on fire suppression.

Management Goal 2—*Rehabilitate burned areas to mitigate the adverse effects of wildland fire on soil and vegetation in a cost-effective manner and to minimize the possibility of wildland fire recurrence or invasion of weeds.*

Rationale

The BLM's "Emergency Fire Rehabilitation Handbook" (H-1742-1) outlines the process for implementing emergency fire rehabilitation projects following wildland fires and wildland fire use. Emergency fire rehabilitation funds may be used to:

- protect life, property, and soil, water, and vegetation resources;
- prevent unacceptable onsite or offsite damage;
- facilitate meeting land use plan objectives and other Federal laws; and
- reduce the invasion and establishment of undesirable or invasive vegetation species.

Monitoring

Monitoring studies are encouraged on all emergency fire rehabilitation projects to determine whether emergency fire rehabilitation objectives are being met. Monitoring would be implemented on all projects that employ new techniques, seed mixes, or rehabilitation methods. Emergency fire rehabilitation funds may be used to fund monitoring studies for up to three growing seasons following fire control.

Management Direction by Alternative

Alternative A

Currently, emergency fire rehabilitation activities are implemented on a case-by-case basis following wildland fire. A separate environmental analysis is completed for each emergency fire rehabilitation project.

Alternatives B, C, and D

Emergency fire rehabilitation activities would be implemented after wildland fire. Emergency fire rehabilitation funds may be available for rehabilitation after wildland fire use, depending on the situation. Resource area direction for implementing emergency fire rehabilitation projects is found in Appendix L. Separate environmental analysis would only be completed for emergency fire rehabilitation projects that are outside the scope of activities described in Appendix L.

Alternative E

No emergency fire rehabilitation projects would be implemented under this alternative.

Management Goal 3—*Restore and maintain ecosystems consistent with land uses and historic fire regimes through wildland fire use and prescribed fire. Reduce areas of high fuel loading resulting from years of fire suppression that may contribute to extreme fire behavior.*

Rationale

Both the "Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin" (USDA-FS and USDI-BLM 1996) and the "Federal Wildland Fire Management Policy and Program Review" (1995) recognize fire's essential role as an ecological process. The LRA is charged with clearly defining fire management goals, objectives, and actions in comprehensive fire management plans, which are tiered to this RMP. Fire management plans would include identification of areas for wildland fire use and prescribed fire.

ICBEMP emphasizes that strategic watershed-scale fuel management and fire use planning, often integrating a variety of treatment methods, would cost-effectively reduce fuel hazards to acceptable levels and achieve both ecosystem health and resource benefits. Fire management programs and activities should be based upon protecting resources, minimizing costs, and achieving land management objectives. They must also be economically viable. ICBEMP also stresses the use of fire to restore and sustain ecosystem health based on sound scientific principles and information. This must also be balanced with other societal goals, including public health and safety, air quality, and other specific

environmental concerns. Finally, ICBEMP states that prescribed fire should be considered in wilderness areas where it has been determined that wildland fire use for resource benefit would not achieve desired rates of ecosystem maintenance or restoration.

Sound risk management is a foundation for all fire management activities. Risks and uncertainties relating to fire management activities must be understood, analyzed, communicated, and managed as they relate to the cost or consequences of either doing or not doing an activity.

Monitoring

Monitoring would be used to determine whether prescribed fires, hazardous fuels reduction treatments, and wildland fire use are meeting resource objectives.

Management Common to All Alternatives

An fire management plan would be updated for the LRA within 2 years of completion of the RMP. The fire management plan would prescribe the appropriate management response, including full suppression and modified suppression, throughout the resource area. It would also identify conditions and potential locations for wildland fire use and for prescribed fires, as well as other factors pertaining to fire management in LRA.

For Alternatives A, B, C, and D, prescribed fire acres refer to those areas included in an environmental assessment; it does not assume that 100 percent of those acres are burned. In treating areas, the intent is to actually burn approximately 40–70 percent, and keep 30–60 percent unburned. A goal of landscape-level prescribed fire treatments is to break up burned and unburned areas in a mosaic effect. The acres listed in the alternatives are upper limits, and not targets. For Alternatives C and D, wildland fire use may cause the number of treated acres to vary widely from year to year, and in some years may accomplish a very large number of treated acres. Lightning-caused fires in excess of 100,000 acres have occurred periodically in the rangeland fuels on the LRA.

Management Direction by Alternative

Alternative A

Use prescribed fire and mechanical hazardous fuels reduction treatments on a case-by-case basis to improve forage base and restore natural processes. There are no areas designated for wildland fire use. The Fort Rock Fire Management Area is managed for appropriate suppression response, not currently for wildland fire use. Many fires occurring within the Fort Rock Fire Management Area boundaries are monitored and allowed to be extinguished naturally. For the past 5 years, BLM has prescribed burned approximately 5,000 to 20,000 acres per year (this is approximately 0.15 to 0.6 percent of the LRA). There have been very little mechanical hazardous fuels reduction treatments on the LRA. Appendix B of the "Lakeview Grazing EIS" describes mechanical/chemical treatments to shrub/western juniper habitats, few of which have been implemented (Map FM-1).

Alternative B

Under this alternative, prescribed fire and mechanical hazardous fuels reduction treatments would only be used primarily to enhance commodity production and enhance the forage base for livestock. Therefore, landscape level treatments would not occur under this alternative. There would be no areas designated for wildland fire use. No more than 2 percent of the resource area (64,000 acres) would be treated annually by prescribed fire or mechanically under this alternative; less than 10 percent (320,000 acres) would be burned or mechanically treated for hazardous fuels reduction in a 10-year period (Map FM-3).

Alternative C

Under this alternative, prescribed fire, mechanical fuel treatments, and wildland fire use would be emphasized to restore natural processes, and to protect, maintain, and enhance natural resources. Emphasis would be placed on using prescribed fire for restoration of degraded shrublands and rangelands. Areas for possible wildland fire use would be determined under this alternative (Map FM-4), but would be further analyzed in the fire management plan. The Fort Rock Fire Management Area would no longer be managed for appropriate suppression response, but would be managed for wildland fire use. No more than 20 percent of the resource area (640,000 acres) would be treated annually by prescribed fire, mechanical fuel treatments, and wildland fire use combined under this alternative. Less than 40 percent (1,280,000 acres) would be treated in a 10-year period.

Alternative D

Under this alternative, prescribed fire, mechanical fuel treatment, and wildland fire use would be used to: protect, maintain, and enhance natural resources;

restore degraded habitats; and protect other adjacent Federal, state and private land. Areas for wildland fire use would be determined under this alternative (Map FM-5), but would be further analyzed in the fire management plan. The Fort Rock Fire Management Area would no longer be managed for appropriate suppression response, but would be managed for wildland fire use. No more than 15 percent of the resource area (480,000 acres) would be treated annually by prescribed fire, mechanical fuel treatment for hazard reduction, and wildland fire use under this alternative. Less than 35 percent (1,120,000 acres) of the resource area would be treated in a 10-year period.

Alternative E

Under this alternative, there would be no prescribed fire, no mechanical fuel treatments for hazard reduction, and no wildland fire use for resource benefit.

Recreation Resources

Management Goal—*Provide and enhance developed and undeveloped recreation opportunities, while protecting resources, to manage the increasing demand for resource-dependent recreation activities.*

Rationale

The FLPMA provides for recreation use of public land as an integral part of multiple use management. Dispersed, unstructured activities typify the recreational uses occurring throughout the majority of the LRA. Policy guidelines in BLM Manual 8300 direct the BLM to designate special units known as special recreation management areas. Management within these special recreation management areas focus on providing recreation opportunities that would not otherwise be available to the public, reducing conflicts among users, minimizing damage to resources, and reducing visitor health and safety problems. Major investments in recreation facilities and visitor assistance are appropriate in special recreation management areas when required to meet management objectives.

Public lands not designated as special recreation management areas, or other special designations, are managed as extensive recreation management areas. Management direction within extensive recreation management areas focus on actions to facilitate recreation opportunities by providing basic information and access. Visitors in extensive recreation management areas are expected to rely heavily on their own equipment, knowledge, and skills while participating in recreation activities. All areas within the LRA not covered under a special designation, e.g., WSA's, special recreation management areas, ACEC's, etc., would be managed as an extensive recreation management area.

In accordance with FLPMA, the "BLM's Recreation 2000 Plan and Update" sets recreation policy on the national level. The policy emphasizes resource-dependent recreation opportunities that typify the vast western landscapes; striving to meet the social and economic needs of present and future generations, providing for the health and safety of the visitor, and accomplishing these goals within the constraints of achieving and maintaining healthy ecosystems.

Monitoring

Monitoring would include periodic patrols to check boundaries, signing, and visitor use; to maintain facilities; to ensure visitor compliance with rules and regulations; to establish baseline data and observation points to determine current impacts from recreation use; to rehabilitate specific sites as necessary, including the development of recreation facilitates to protect sites against undue recreation use impacts; and development of studies to help determine appropriate levels and patterns of recreational use and the influences of other resource uses.

Actions Common to All Alternatives

Under Alternatives B, C, and D, the North Lake County Special Recreation Management Area (Maps R-1 and -8) and extensive recreation management area designations would become effective upon signature of the approved RMP and record of decision. Individual recreation area management plans outlining specific management of special recreation management areas would be prepared following publication of the approved RMP. An environmental assessment would be prepared for each recreation area management plan.

Recreation area management plans would not be prepared for the extensive recreation management area. Specific management actions or projects in the extensive recreation management area would be included in individual project plans or in plans written for SMA's following publication of the approved RMP.

Under all alternatives, any recreational use within ACEC's, including commercial and noncommercial uses authorized under special recreation permits, would

be evaluated on a case-by-case basis and would be permitted, modified, or prohibited as needed to protect ACEC values.

In the Lost Forest/Sand Dunes/Fossil Lake ACEC, collection of down and dead wood and firewood cutting would continue to be prohibited. Means to provide firewood for campers on high-use weekends would be investigated including permitting a concessionaire to sell firewood.

Throughout the LRA, occupancy and use for recreational camping is limited to 14 consecutive days. Camping within 300 feet of any water source is prohibited. A water source is defined as any fenced spring enclosure, flowing spring, man-made metal or concrete water tank or trough, or dirt pond.

No personal water craft (e.g., jet skis and waverunners) would be allowed in the Warner Lakes Special Recreation Management Area, except under Alternative A.

Designation of scenic byways or vehicle routes would be considered, provided they are consistent with OHV designations and resource concerns are addressed.

Under Alternatives A, B, C, and D, no wilderness therapy groups would be authorized to camp in north Lake County west of County Road 5-12 B (starting at the Deschutes and Lake County line), and BLM Road 6121 (ending on County Road 5-14), with the exception of one campsite located on the north side of Bull Lake. Only campsites within Prineville and Burns Districts associated with wilderness therapy operations in north Lake County (and southern Deschutes County) would be addressed under this RMP. Campsites within Prineville District are currently located in Sections 4, 14, and 34, T.22S., R.19E.; Sections 1 and 3, T.23S., R.19E.; Sections 15 and 36, T.23S., R.20E.; Sections 19, 29, and 33, T.23S., R.12E.; and Sections 5, 8, and 23, T.24S., R.21E. Campsites within the Burns District are currently located in Sections 4, 13, 22, and 26, T.25S., R.22E., and Section 2, T.26S., R.22E.

Management Direction by Alternative

Alternative A

Under this alternative, the designation of special recreation management areas to enhance tourism and recreation opportunities would be considered, and all other public land would be managed as extensive recreation management area. Existing developed and undeveloped recreation sites (including trails, wildlife viewing areas, back country byways, interpretive areas, and campgrounds) would be expanded to accommodate increased visitation. Opportunities for partnerships to expand tourism and recreation would be optimized. Visitors' recreation experiences would be provided through increased information and education opportunities.

Management of the existing Warner Wetlands Special Recreation Management Area would continue and the remaining public land throughout the LRA would be managed as an extensive recreation management area. If necessary, new special recreation management areas would be established as necessary to provide tourism and recreation opportunities.

Commercial recreation opportunities would be continued through the authorization of special recreation permits consistent with present and future management direction while providing for resource protection. Special recreation permits, for both commercial and noncommercial activities, would be authorized throughout the LRA.

The Sunstone Collection Area would be managed under existing guidelines, i.e., no commercial collection of stones, and only hand tools may be used.

Development of a watchable wildlife site on the north end of Abert Lake would be considered.

Overnight camping would continue to be allowed in the Black Hills ACEC.

Wilderness therapy schools would continue to be authorized, through the issuance of special recreation permits, to operate on BLM-administered lands within the LRA and portions of the Prineville and Burns Districts.

Total user days (defined as any calendar day, or portion thereof, that a participant/client/student is accompanied or serviced by an operator or permittee) for this activity may not exceed 16,600 for combined use in Lakeview, Prineville, and Burns Districts. Group size would be limited to nine students, plus staff. In North Lake County, no wilderness therapy schools would be authorized to operate with more than two groups at any one time within Lakeview, Burns, and Prineville Districts. No more than five groups would be authorized to operate concurrently within north Lake County. When possible, no campsites would be authorized within 5 miles of any year-round residence.

Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: Management of the Warner Wetlands Special Recreation Management Area would remain the same unless modified through a site-specific review, subject to meeting NEPA requirements. Existing management direction allows hunting and motorized boating within the special recreation management area. Vehicles are required to stay on designated roads and trails. The following projects, previously approved to enhance and provide new recreation opportunities, would be considered:

- Upgrade approximately 12–13 miles of existing roads to provide all-weather public access to Turpin Lake, Campbell, and Stone Corral Lakes.
- Construct small campgrounds at Turpin and Campbell Lakes with associated boat ramps, parking areas, and vault toilets.
- Continue to develop handicap accessible nature trails, view points, and interpretive sites within the special recreation management area.
- Develop and maintain foot and canoe trails and develop self-guiding interpretive literature.
- Pursue development of a joint USFWS and BLM campground along County Road 3-12.

Alternative B

The designation of special recreation management areas to enhance tourism and recreation opportunities would be optimized. All remaining public land not under special designation status would be managed as an extensive recreation management area. Existing developed and undeveloped recreation sites (including trails, wildlife viewing areas, back country byways, interpretive areas, and campgrounds) would be expanded to accommodate increased visitation. Opportunities for partnerships to expand tourism and recreation would be optimized. Visitors' recreation experiences would be enhanced through increased information and education opportunities.

Commercial and competitive use opportunities would be emphasized through the issuance of special recreation permits.

Specific Direction

Wilderness therapy schools would not be authorized in excess of 16,400 user days, through the issuance of special recreation permits, to operate on BLM-administered lands within the LRA. The 16,400 users days would be split between the North Lake Special Recreation Management Area (8,300) and the remainder of the LRA (8,100). The North Lake Special Recreation Management Area would include use within the general areas of Prineville and Burns Districts as described under management commont to all alternatives. Group size would be limited to 12 students/group, plus staff. No company would be authorized to operate with more than two groups at ay one time in the North Lake Special Recreation Management Area and no more than five groups could operate concurrently. No more than three groups per company would be authorized to operate within the remainder of the LRA at any one time. When possible, no campsites would be authorized within 5 miles of any year-round residence.

Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: Management of the Warner Wetlands Special Recreation Management Area would be the same as listed under Alternative A.

North Lake County Special Recreation Management Area: The North Lake County Special Recreation Management Area would be established. Primary values include, but are not limited to, unique geologic features, cultural resources, wildlife resources, botanical resources, scenery, and a variety of recreational opportunities such as hunting, fishing, hiking, sightseeing, motorized and non-motorized OHV activities, environmental education, and scientific studies. The special recreation management area would include four WSA's (Devils Garden, Squaw Ridge, Four Craters, and Sand Dunes), the Lost Forest/Sand Dunes/Fossil Lake ACEC, Duncan Reservoir Campground, West Fork Silver Creek, Buck Creek, and the associated geologic and natural features in the area (i.e., Black Hills, Crack-in-the-Ground, Derrick Cave, Sand Dunes, Lost Forest, Fossil Lake, and Table Rock). The management emphasis for this special recreation management area would include, but not be limited to, OHV use, increased monitoring and patrols to curb vandalism, and encourage commercial uses (e.g., wilderness therapy schools, guided hunting, and nature tours, etc.).

Management of the Lost Forest/Sand Dunes/Fossil Lake ACEC would be consistent to that under Alternative A. Collection of down and dead wood and firewood cutting in the ACEC would be prohibited. Means to provide firewood for campers on high-use weekends would be investigated including permitting a concessionaire to sell firewood. The main road through the Lost Forest RNA/ISA (BLM Roads 6151 and 6141A) would be upgraded to a single lane road with turnouts and parking pulloffs. If the Sand Dunes WSA is not designated wilderness, the BLM would consider developing a campground on adjacent Federal land and charge use fees if no private campground is developed in the adjacent area.

The Green Mountain primitive campground would be upgraded to a developed campground. Facilities could include developed campsites, toilet facilities, and a potable water system. The Duncan Reservoir Campground would be upgraded with the development of a potable water system. Fees would be charged for the use of these campgrounds if the proposed upgrades are implemented.

Development of picnic area along Highway 31 (at milepost 34.5) would be considered. Facilities could include picnic sites with tables, vault toilets, potable water system, and kiosks for interpretation of resources and history within the North Lake County Special Recreation Management Area.

Alternative C

Recreation would be focused towards undeveloped types of activities while assuring a high level of protection of natural and cultural values. Developed recreation would be focused on the protection and interpretation of cultural and natural values and for public health and safety. If resource values are being degraded beyond acceptable levels, site rehabilitation or closure would be favored. Tourism opportunities would be deemphasized. Visitors' recreation experiences would be enhanced through increased information and education opportunities.

Special recreation management areas would be designated with an emphasis on undeveloped, dispersed recreation opportunities and protection of natural values. Minimal facilities would be constructed and maintained. All lands not designated as a special recreation management area would be managed as an extensive recreation management area.

The issuance of special recreation permits would be limited and the protection of cultural and natural values would be emphasized.

The Sunstone Collection Area would be managed under existing guidelines as listed in Alternative A.

Overnight camping would be prohibited within the Juniper Mountain ACEC.

Commercial and noncommercial special recreation permits would not be authorized within the Rahilly-Gravelly ACEC/RNA.

Wilderness therapy schools would be authorized a maximum of 10,200 user days to operate on BLM-administered lands within the Lakeview District and portions of Prineville and Burns Districts. The 10,200 users days would be split between the North Lake Special Recreation Management Area (4,800) and the remainder of the LRA (5,400). Group size would be limited to nine students/group, plus staff. No school would be authorized to conduct operations with more than one group at any one time, and no more than four groups would be authorized to operate concurrently in the North Lake Special Recreation Management Area. Throughout the remainder of the LRA, no school would be authorized to conduct operations with more than two groups at any one time. When possible, no permanent campsites would be would be authorized within 5 miles of any year-round residence. No wilderness therapy school would be allowed to operate within the North Lake Special Recreation Management Area in the winter between December 1 and March 31, annually.

Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: The Warner Wetlands Special Recreation Management Area would be managed to protect natural and cultural values. Management would be modified through a site-specific review, subject to meeting NEPA requirements. Motorized boating within the special recreation management area would be allowed. Vehicles would be restricted to a few designated roads and trails. The following projects would be considered:

- Upgrade roads as necessary for resource protection.
- Close and rehabilitate roads as necessary.
- Maintain present facilities, e.g., handicap accessible nature trails, view points, and interpretive

sites within the special recreation management area.

- Develop and maintain foot and canoe trails and develop self-guiding interpretive literature in response to increased use.

- Pursue development of a joint USFWS and BLM campground along County Road 3-12.

North Lake County Special Recreation Management Area: The North Lake County Special Recreation Management Area would be established to include the areas as described under Alternative B. Management emphasis would be on protection of natural and cultural resource values.

The Black Hills ACEC would be a day-use area only with no overnight camping. Collection of dead and down wood and firewood cutting would be prohibited.

No camping would be allowed in the Connley Hills ACEC. Development of designated, primitive campsites adjacent to the southern end of the ACEC would be considered. The collection of dead and down wood and firewood cutting within the ACEC would be prohibited.

The Lost Forest/Sand Dunes/Fossil Lake ACEC would be closed to overnight camping. The entire ACEC would be day-use only, and closed to OHV's. Open fires would be prohibited throughout the ACEC.

Recreation use within the Table Rock ACEC would be limited to day-use only—no overnight camping would be allowed. Designation of a camping area outside, but adjacent to the ACEC would be considered.

Climbing and rappelling activities would be prohibited in the Crack-in-the-Ground.

Alternative D

The designation and management of special recreation management areas would focus on providing quality recreation opportunities while protecting resource values. Remaining public lands would be managed as an extensive recreation management area. Management of existing recreation sites, areas, and their associated improvements would be continued and expansion would be allowed. New recreation sites and areas would be established to meet increased recreation demand and for the protection of cultural and natural values and public health and safety. Tourism opportunities and development would be pursued only if they are consistent with meeting other resource objectives. Visitors' recreation experiences would be enhanced through increased information and education opportunities.

Special recreation permits would be issued on an as needed basis to meet demand while protecting cultural and natural resource values and public health and safety.

Camping within the Juniper Mountain ACEC would be limited to designated primitive camping areas.

The Sunstone Collection Area would be managed under existing guidelines as listed in Alternative A. Development of a designated, primitive campground in the vicinity of the Sunstone Collection Area would be considered within the next 10 to 15 years. Facilities would include campsites and an improved vault toilet. A fee would be charged for use of this campground.

Wilderness therapy schools would be authorized a maximum of 12,800 user days to operate on BLM-administered lands within the LRA. The 12,800 users days would be split between the North Lake Special Recreation Management Area (7,400) and the remainder of the LRA (5,400). Group size would be limited to nine students/group, plus staff. No school would be authorized to operate more than two groups at any one time within the North Lake Special Recreation Management Area (Lakeview, Burns, and Prineville Districts), and no more than four groups would be authorized to operate concurrently in this area. Throughout the remainder of the LRA, permittees would be authorized to operate with no more than three groups at any one time. When possible, no permanent campsites would be authorized within 5 miles of any yearround residence.

Special Recreation Management Areas

Warner Wetlands Special Recreation Management Area: Management of the Warner Wetlands Special Recreation Management Area would remain the same under Alternative A, unless modified through a site-specific review, subject to meeting NEPA requirements. Motorized boating within the special recreation management area would be allowed. Vehicles would be restricted to designated roads and trails. The following projects would be considered:

- Upgrade roads as necessary for resource protection only.

- Close and rehabilitate roads as necessary.
- Maintain present facilities, e.g., handicap accessible nature trails, view points, and interpretive sites within the special recreation management area.
- Develop and maintain foot and canoe trails and develop self-guiding interpretive literature.
- Pursue development of a joint USFWS and BLM campground along County Road 3-12.

North Lake County Special Recreation Management Area: The North Lake County Special Recreation Management Area would be established to include the areas as described under Alternative B. Management emphasis would be on protection of natural and cultural resource values.

No overnight camping would be allowed in the Black Hills ACEC. The entire ACEC would be day-use only. Collection of dead and down wood and firewood cutting would be prohibited.

In the Connley Hills ACEC, camping would be allowed in designated camping areas in the southern portion of the ACEC only.

The main road through the Lost Forest/Sand Dunes/Fossil Lake ACEC would be upgraded as described under Alternative B to prevent continued resource damage. Small pulloffs would be constructed for vehicle parking. Primitive camping areas would be designated in the Lost Forest RNA/ISA and in areas within the Sand Dunes WSA. Campsites located at the base of Sand Rock (in the Lost Forest) would be closed and rehabilitated. Parking areas along the main road within the vicinity of the Sand Rock would be constructed for day-use activities.

There would be three camping/staging areas allowed in the Sand Dunes WSA. Use of these three camping/staging areas would be managed on a rotational basis, i.e., two of the camping/staging areas would be open and available to use and the other area would be closed for an indeterminant amount of time (2–6 years) to allow natural rehabilitation to occur. The length of the closure would be based on the following criteria: (1) success of natural revegetation, (2) obliteration of human activities from the natural movement of sand, and (3) the public's adherence to the closures. Designation of specific travel routes from the camping/staging areas to the barren dunes which are open to OHV use would be established. Adaptive management activities which would allow the continued use of each of these camping/staging areas would be adopted as necessary to ensure the long-term use and protection of these areas. Collection of dead and down wood and firewood cutting would be prohibited throughout the ACEC. However, opportunities such as a concessionaire, to provide firewood for high-use weekends would be explored.

Camping would be allowed in designated camping areas within the Table Rock ACEC.

Climbing and/or rappelling activities would be prohibited in the Crack-in-the-Ground.

Development of a picnic area along Highway 31 (at milepost 34.5 south) would be considered. Facilities would include picnic sites with tables, vault toilets, and kiosks for interpretation of resources and history within the North Lake County Special Recreation Management Area.

Alternative E

Recreation management would be kept to a minimal level. Recreation would be focused towards undeveloped types of activities while assuring a high level of protection of natural and cultural values. Developed recreation would be focused on the protection and interpretation of cultural and natural values and for public health and safety. If resource values are being degraded beyond acceptable levels, site rehabilitation or closure would be favored.

Tourism opportunities would be deemphasized. Information and interpretive education would not be provided to the visiting public. No commercial special recreation permits would be issued and existing permits would be terminated. Only surface collection would be allowed in the Sunstone Collection Area.

The Lost Forest/Sand Dunes/Fossil Lake ACEC designation would be revoked. The former ACEC would be managed in the same manner as the surrounding land. OHV's would be limited to existing roads and trails. The Lost Forest ISA and Sand Dunes WSA designations would continue. These areas would continue to be managed according to the wilderness IMP until such time as Congress makes a decision regarding their designation as wilderness.

Special Recreation Management Areas

No special recreation management areas would exist;

all public land would be managed as an extensive recreation management area.

Off-Highway Vehicles

Management Goal—*Manage off-highway vehicle (OHV) use to protect resource values, promote public safety, provide OHV use opportunities where appropriate, and minimize conflicts among various users.*

Rationale

Federal regulations (43 CFR Part 8340) and BLM planning guidance require the BLM to designate all BLM-administered land as either open, limited, or closed in regard to off-road (now termed "off-highway") vehicle use. These designations are to help meet public demand for OHV activities, protect natural resources, ensure public safety, and minimize conflicts among users.

Monitoring

Monitoring would include periodic patrols to check boundaries, signing, and visitor use. Closures would be monitored to ensure public safety and protect affected roadbeds or areas. Special recreation permits would be issued with appropriate mitigative measures for commercial, competitive, and other organized OHV activities. Baseline data would be established and sites rehabilitated or closed as necessary.

Actions Common to All Alternatives

All management actions for those portions of ACEC's within ISA's or WSA's would be governed by 1995 IMP until such time as Congress makes a determination regarding wilderness designation. The OHV designations in WSA's would remain in effect until Congressional release of the WSA's, or until such time that actual or unforeseeable use levels cause the nonimpairment criteria to be violated, in which case more restrictive designations may be made. Areas released from WSA status would be managed according to the designations of the surrounding area.

Map R-1 shows the location of each WSA and Appendix J1 contains a description of each area. OHV's are limited to existing roads and ways within WSA's for all alternatives with the following exceptions: under Alternative C, the Sand Dunes WSA would be closed while all other WSA's would be limited to designated roads and ways; under Alternative D, portions of the Sand Dunes WSA would be both open and closed; under Alternative E, the Sand Dunes WSA would be closed.

For the purposes of this analysis, "existing roads and trails" are defined as those roads and trails that appear on USGS 7.5 minute topographic maps published prior to the 1990's as these represent the best available road inventory data within the LRA.

The limitations to OHV use proposed under these alternatives do not apply to official use, any fire, military, emergency or law enforcement vehicle when used for emergency purposes, and any combat or combat support vehicle when used for national defense purposes, and any vehicle whose use is expressly authorized under a permit, lease, license, or contract.

Off-road vehicle means any motorized vehicle designed for or capable of, or designed for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any nonamphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; (5) any combat or combat support vehicle when used in times of national defense emergencies.

Designation of scenic byways or vehicle routes would be considered, provided they are consistent with OHV designations and resource concerns are addressed. Additional environmental analysis and documentation would be required.

Any roads not designated as open may be signed and physically closed or barricaded and restored. Priority areas for restoration would be riparian conservation areas, damaged watersheds, and crucial wildlife or plant habitat.

Emergency vehicle closures previously implemented would continue, unless located within a proposed ACEC with a different OHV prescription. Future emergency vehicle closures may be implemented if it is determined that OHV's are causing or would cause considerable adverse effects upon resources. Such emergency closures would be announced via a notice published in the *Federal Register* and in local newspapers.

Table 3-5 shows OHV designations for the resource area by alternative. Refer to Table 3-6 for total acres designated for OHV use.

Table 3-5.—*Off-highway vehicle designations by area by alternative* [1, 2]

	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
Area	Designation	Acres	Designation	Acres	Designation	Acres	Designation	Acres	Designation	Acres
Areas of critical environmental concern										
Existing										
Devils Garden	E	28,241	E	28,241	D	28,241	D	28,241	E	28,241
Lake Abert	E	43,022	E	50,117	D	50,117	E	43,022	E	
Lost Forest/Sand Dunes/Fossil Lake										
Fossil Lake	C	6,660	C	6,660	C	6,660	C	9,379	C	6,660
Lost Forest RNA/ISA	D	9,047	D	8,883	C	8,883	D	8,883	E	9,047
Sand Dunes WSA	O	11,453	O	11,453	C	11,453	O	11,453	C	11,453
Remainder of ACEC	O	8,960	O	8,580	C	8,580	D/O	7,927	C/E	8,960
Warner Wetlands	D	53,087	D	53,087	D	53,087	D	53,087	E	
Proposed										
Black Hills					C	3,049	D	3,125	E	
Connley Hills			E	3,599	D	3,599	D	3,599	E	
Fish Creek					D	8,725	D	8,725	E	
Foley Lake					D	2,746	D	2,230	E	
Guano Creek/Sink Lakes							D	4,936	E	
Hawksie-Walksie					D	16,369	D	16,369	E	
High Lakes					D	38,855	D	36,572	E	
Juniper Mountain					D	6,335	D	6,335	E	
Lake Abert ACEC addition					D	18,019	D	18,019	E	
Rahilly-Gravelly					D	20,127	E	19,648	E	
Red Knoll					D	11,588	D	11,127	E	
Spanish Lake					D	5,891	D	5,138	E	
Table Rock					D	5,073	D		E	
Wilderness study areas [3, 6]	E	461,310	E	461,310	D	454,221	E	343,778	E	461,310
Wilderness study areas							D	110,443	E	
WSA acquired lands					D	1,297	D	895	E	
							E	402	E	
					E	2,206	E	2,206	E	

Area	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
	Designation	Acres	Designation	Acres	Designation	Acres	Designation	Acres	Designation	Acres
Other areas										
Alkali Lake Dunes	E	6,813	E	6,813	E	6,813	E	6,813	E	6,813
Black Hills	D	1,729	D	1,729	C	3,049	D	3,125		
Buck Creek	C	590	C	590	C	590	C	590	C	590
Cougar Mountain	C	44	C	44	C	44	C	44	C	44
Crane Mountain	C	1,057	C	1,057	C	1,057	C	1,057	C	1,057
Deer winter range[4]	D/O[5]	66,460	D/O[5]	66,460	D/E	100,834	D/E	100,834	D/E	66,460
Northern wildlife area					E	275,463	E	275,463	E	
Picture Rock Pass	E	491	E	491	E	491	E	491	E	491
South Green Mountain	C	14	C	14	C	14	C	14	C	14
Table Rock	C	57	C	57		5,891	D	5,138	C	57
West Side Gravel Pit	C	121	C	121	C	121	C	121	C	121
Remainder of LRA	O	2,490,495	O	2,487,442	E	2,004,005	O	2,466,255	E	3,056,689

[1] E = existing roads and trails; D = designated roads and trails; C = closed; and O = open.
[2] Acreage figures may not total correctly for the planning area (3,161,416 acres) due to overlap between areas (for example, Devils Garden ACEC equals the Devils Garden WSA, and acres appear in both designations.
[3] The acreage for the Sand Dunes WSA is found under ACEC's.
[4] Silver Lake and Fort Rock areas.
[5] Designated roads and trails from 12/1–3/31; open for the remainder of the year.
[6] OHV designations within WSA's are related to roads and ways; in the remainder of the LRA, they are referred to roads and trails.

Table 3-6.—*Total acres designated for OHV use*

	Alternative				
Designation	A	B	C	D	E
Open	2,510,908	2,507,474	0	2,037,803	0
Existing roads and trails	511,642	515,241	2,349,385	756,705	3,074,960
Designated roads and trails	130,323	130,159	771,524	355,705	66,460
Closed	8,543	8,543	40,507	11,202	19,996
Total	3,161,416	3,161,416	3,161,416	3,161,416	3,161,416

Management Direction by Alternative

Alternative A

Motorized vehicle use would be managed according to current designations. Table 3-5 and Maps R-2, SMA-5, -6, -8, -10, and -23 display the existing OHV designations in the LRA (i.e., open, limited to existing or designated roads and trails [or ways], and closed). Organized off-highway vehicle use would be allowed if it is consistent with protection of resource values. Within WSA's, all mechanical and motorized vehicle use would be limited to existing roads and ways, except for the Sand Dunes WSA which would remain in the open designation.

Alternative B

OHV use would be managed as currently designated as listed in Table 3-5 under Alternative A and shown on Maps R-5 and SMA-5, except for additional limited acres in the proposed Connley Hills ACEC. There would be an emphasis on the open designation. Opportunities for organized OHV events would be greater under this alternative.

Within WSA's, all mechanical and motorized vehicle use would be limited to existing roads and ways, except for the Sand Dunes WSA which would remain in the open designation.

Alternative C

OHV use would be managed under open, limited to existing or designated roads and trails (or ways), and closed OHV use designations. There would be an emphasis on the protection of natural values. Organized OHV events would only be allowed on existing and/or designated roads and trails.

The Sand Dunes WSA would be closed to OHV's.

The existing deer winter range area closure in north Lake County would be expanded by 34,374 acres. During the period December 1 through March 31, annually, motorized travel would be limited to designated roads and trails. The remainder of the year, motorized travel would be limited to existing roads and trails.

A northern wildlife area in north Lake County would be limited to existing roads and trails (or ways within WSA's) year-round in order to protect greater sage-grouse habitat.

These restrictions are shown on Maps R-6 and SMA-5 and Table 3-5.

Alternative D

OHV use would be managed under open, limited to designated or existing roads and trails (or ways in WSA's), and closed OHV use designations with the focus on protection of natural values. Organized OHV events would only be allowed on existing and/or designated roads and trails.

In all WSA's, mechanical and motorized use would be limited to existing roads and trails. Exceptions would be for the Sand Dunes portions that would be designated open and closed, and the Devils Garden Lava Beds which would be limited to designated roads and trails.

The existing deer winter range area closure in north Lake County would be expanded by 34,374 acres. During the period December 1 through March 31, annually, motorized travel would be limited to designated roads and trails. The remainder of the year motorized travel would be limited to existing roads and trails.

A northern wildlife area in north Lake County would

be limited to existing roads and trails (or ways within WSA's) year round in order to protect greater sage-grouse habitat.

These restrictions are shown on Maps R-7, SMA-5, -7, -9, -10 to -23, and Table 3-5.

Alternative E

Designations for existing ACEC's would be revoked and no new ones would be designated. Vehicle management in WSA's and several other small areas would be the same as in Alternative A, except for the Sand Dunes which would be closed. The rest of the LRA would be limited to existing roads and trails.

Visual Resources

Management Goal—*Manage public land actions and activities consistent with visual resource management (VRM) class objectives.*

Rationale

Section 102(8) of FLPMA declares that public land would be managed to protect the quality of scenic values and, where appropriate, to preserve and protect certain public land in its natural condition. NEPA, Section 101(b), requires Federal agencies to "assure for all Americans... esthetically pleasing surroundings." Section 102 of NEPA requires agencies to "utilize a systematic, interdisciplinary approach which would ensure the integrated use of... Environmental Design Acts in the planning and decision making" process. Guidelines for the identification of VRM classes on public land are contained in BLM Manual Handbook 8410-1, Visual Resource Inventory. The establishment of VRM classes on public land is based on an evaluation of the landscape's scenic qualities, public sensitivity toward certain areas (such as certain special recreation designations and WSA's), and the location of affected land from major travel corridors (distance zoning).

Monitoring

Use the visual contrast rating system, described in BLM Manual 8400, where appropriate, when assessing proposals for projects on public land.

Actions Common to all Alternatives

WSA's would be managed under VRM Class I. Should a WSA not be designated by Congress, the area would return to the original inventoried VRM class unless it has been reclassified in a SMA (such as an ACEC, RNA, or WSR, etc.).

Management Direction by Alternative

Alternative A

Management would continue as described under the existing management framework plan and plan amendments. Emphasis would be given to protecting and/or mitigating intrusions in medium and high scenic quality areas. All developments, land alterations, and vegetative manipulations within 5 miles of all major travel routes and recreation sights would be designed to minimize visual impacts (unseen areas within these 5-mile zones would not be held to this standard). Pipelines, powerlines, season-long grazing, vegetation spraying, western juniper chaining, or other major vegetative alteration projects would not be allowed in high scenic quality areas. Grass seedings, shrub plantings, tree plantings, fires, insect infestations, and other vegetation alternations would be allowed along major travel routes within low-quality scenic areas. Vegetation manipulation projects would be designed to maximize scenic quality, but minimize scenic intrusions. Visual resources in existing ACEC's would be managed as displayed in Table 3-3. WSA's would be managed under VRM Class I. The remainder of public land would be managed under VRM classifications as shown on Map VRM-1.

Alternative B

Visual resources in the LRA within ACEC's would be managed the same as under Alternative A, as shown in Map VRM-1.

Alternative C

Visual resources within ACEC's would be managed as displayed in Table 3-3 and shown in Map VRM-2. WSA's would be managed under VRM Class I. Management of eligible or suitable WSR's would be managed under Class II, unless managed as Class I under other resource prescriptions (e.g., WSA's, ACEC's/RNA's). Public land would be managed under VRM classifications as indicated in Table 3-3.

Alternative D

Visual resources in ACEC's would be managed as displayed in Table 3-3. WSA's would be managed

under VRM Class I. Should a WSA not be congressionally designated as wilderness, the area would be managed under VRM Class III. Management of eligible or suitable WSR's with a potential classification of wild or scenic would be under Class II, unless managed as Class I under other resource prescriptions (e.g., WSA's, ACEC/RNA's). Public land would be managed under VRM classifications as indicated in Table 3-3 and shown in Map VRM-3.

Alternative E

Natural processes would occur with minimal human intervention. Existing VRM classes would be removed except for WSA's, which would be managed under VRM Class I. Should a WSA not be congressionally designated as wilderness, the area would not be assigned any VRM management class. Public land would be managed under VRM classifications as indicated in Table 3-3.

Energy and Mineral Resources

Within legal constraints, all publicly-owned locatable, leasable, and salable minerals would be available for exploration, development, and production subject to existing regulations and standard requirements and stipulations. Locatable minerals would not be available in areas withdrawn from the operation of the mining laws. Where necessary to protect important lands and resources, mineral exploration and development would be subject to additional restrictions which, in some cases, could include no leasing, no disposal of mineral materials, no surface occupancy, no ground disturbance, wilderness IMP non-impairment standard, special design requirements, requiring preparation of a plan of operations, access limitations, and seasonal or other timing restrictions. Appendix N3 describes the types of standard mineral development stipulations and guidelines that apply to the planning area. Acres of mineral ownership, withdrawals, and restrictions have been generated using a geographic information system. Table 3-7 summarizes acres of mineral restrictions which would apply to the various alternatives.

Energy derived from the burning of biomass generated by juniper treatment is covered in the Forest and Woodlands section.

Management Goal 1—*Provide opportunity for the exploration, location, development, and production of locatable minerals in an environmentally-sound manner. Eliminate and rehabilitate abandoned mine hazards.*

Rationale

The general mining laws give the public the basic right to locate and develop mining claims on public land. The "Mining and Minerals Policy Act" of 1970 declares that it is the continuing policy of the Federal government to foster and encourage private enterprise in the development of domestic mineral resources. Section 102 of FLPMA directs that the public land would be managed in a manner which recognizes the Nation's need for domestic sources of minerals and other commodities from the public lands, while managing these lands in a manner that would protect scientific, scenic, historic, archeological, ecological, environmental, air and atmospheric, and hydrologic values. The Bureau's mineral policy (1984) states that public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is clearly justified in the national interest.

Monitoring

Monitoring of activities on mining claims would be conducted to ensure compliance with the 43 CFR 3802/3809 regulations. These regulations provide for locatable mineral activities on public lands while preventing unnecessary or undue degradation, and provide for reclamation of disturbed areas and coordination with State agencies. BLM policy establishes minimum inspection frequencies for mining operations as follows: quarterly inspections are required for all operations using cyanide, and biannual inspections for all other active operations. Operations in sensitive areas or operations with a high potential for greater than usual impacts are inspected more often.

Management Common to All Alternatives

Locatable mineral exploration and development is regulated under 43 CFR 3802 for WSA's, and 3809 (as amended) for other public lands. The wilderness IMP states that locatable mineral development and exploration activities within WSA's can occur in accordance with the mining laws, but are currently limited to only those actions that do not require reclamation. This policy restriction effectively closes WSA's to mineral location. However, should the wilderness IMP be revised or Congress take action to remove some areas from WSA status, some of these areas could eventually be made more available for mineral location during the life of the plan.

Locatable mineral exploration and development within ACEC's typically requires the preparation and approval

Table 3-7.—*Summary of mineral restrictions by alternative* [1]

	Alternatives			
	A	B	C	D
Locatable minerals				
Open	1,381,287	1,385,374	0	1,311,548
Closed	17,231	14,225	55,415	21,064
Closed NMM [2]	1,900	0	1,900	1,900
NSO [3]	0	0	2,340,360	0
NREC [4]	466,864	466,864	440,916	468,102
Other [5]	1,371,528	1,372,347	214,547	1,436,196
Leasable minerals				
Open	1,373,123	1,376,596	0	1,305,124
Closed	493,697	492,812	579,187	498,602
NSO [6]	612,776	620,006	2,369,434	776,436
Special stipulations [5]	759,214	749,396	290,189	658,648
Salable minerals				
Open	1,391,574	1,395,348	0	1,305,124
Closed	975,044 [7]	969,224 [7]	2,870,643 [8]	1,161,052 [8]
Other	872,192	874,238	312,623	772,634

[1] Numbers shown are in acres.
[2] Closed to nonmetaliferous mining.
[3] Includes areas where no surface occupancy restrictions from greater sage-grouse interim guidelines would apply, but would require a forma to implement.
[4] Activities requiring future reclamation are not allowed.
[5] Other restrictions or special stipulations may include: plan of operations, seasonal access limitations, and special design.
[6] No surface occupancy.
[7] Includes areas identified in existing land use plans under Alternatives A and B where no ground disturbance is allowed to protect greater sa
[8] Includes areas where no surface occupancy restrictions from greater sage-grouse interim guidelines would effectively result in closure to sa minerals under Alternatives C and D.

of a plan of operations prior to development. In addition, many areas within the planning area are subject to numerous overlapping types of mineral location restrictions or special stipulations (refer to Appendix N3). This makes determining the amount of area open, closed, or restricted to mineral development difficult. For instance, an ACEC (which requires a plan of operations) may partially overlap a WSA (which is subject to the no reclamation stipulation). For simplicity, such an area of overlap has been reclassified as no reclamation allowed to reflect the most restrictive management measure in place, regardless of how many other types of restrictions may also apply. Any WSA's which overlap with areas where other mineral restrictions apply, which are later removed from WSA status, would be managed in accordance with the remaining restrictions. In the example above, an area where a WSA overlaps an ACEC would change from no reclamation to open to mineral location after approval of a plan of operations if Congress removed WSA status during the life of the plan.

The amended 3809 regulations became effective on January 20, 2001. Acknowledging a notice (exploration operations of 5 acres or less, outside of SMA's) is not a Federal action that requires compliance with NEPA, so no environmental documentation must be prepared. The BLM does review notices to ensure that no unnecessary or undue degradation would occur, and that a plan of operations is not required. A plan of operations is required for all mining activity that is not casual use, regardless of the number of acres disturbed. A plan is also required for all exploration activities that disturb over 5 acres, bulk sampling which would remove 1,000 tons or more of presumed ore for testing, or for any surface-disturbing operations greater than casual use in certain SMA's and lands/waters that contain federally proposed or listed T&E species or

their proposed or designated critical habitat. The approval of plans of operations is a Federal action that requires NEPA compliance. Mining claim use and occupancy under 43 CFR 3710 also requires NEPA compliance.

As a result of the implementation of the amended 3809 regulations, it is anticipated that LRA would receive several plans of operations in the Rabbit Basin sunstone area annually. Descriptions of plan filing and processing requirements, anticipated activity, and resulting surface disturbance can be found in Appendix N2, Mineral Development Scenarios, Locatable Mineral Resources. Standard mitigating measures can be found in Appendix N3, Stipulations and Guidelines for Mineral Operations. The Lakeview RMP/EIS constitutes the NEPA analysis guiding the approval of future sunstone exploration and mining plans of operations in the Rabbit Basin sunstone area only (Map M-4). It supplements the 2000 "Final Environmental Impact Statement for the Surface Management Regulations for Locatable Mineral Operations." It also amends EA No. OR-010-98-05, "Mining Use and Occupancy—Sunstone Mining Area" (USDI-BLM 1998). Any mining plans of operations or mining claim use and occupancy outside of the Rabbit Basin sunstone area would require separate, and site-specific, NEPA environmental documentation prior to approval.

Management Direction by Alternative

Alternative A

Lands currently open to locatable mineral activity would continue to be available (Table 3-7). Existing restrictions and requirements for other resource protection would apply. The Lost Forest RNA/ISA, part of Abert Rim WSA, and the Public Sunstone Area, totaling approximately 17,231 acres, are currently closed to locatable mineral entry, and would remain closed under this alternative. Approximately 468,864 acres of additional lands located within WSA's are subject to the wilderness IMP nonimpairment/no reclamation standard, and are, for all practical purposes, closed to locatable mineral entry. Mining restrictions for non-metalliferous minerals would continue in public water reserves totaling approximately 1,900 acres. About 1,371,538 acres are subject to a combination of other types of protective stipulations including preparing a plan of operations, seasonal restrictions, access limitations, and special visual design measures. These other restrictions/stipulations apply primarily to areas of big game crucial winter range, areas within 2 miles of greater sage-grouse leks, and VRM class II. The Public Sunstone Collection Area would remain open to recreational collecting.

Alternative B

Locatable mineral restrictions under this alternative would be similar to those for Alternative A with the following exceptions. The mineral segregation on the Public Sunstone Area would be revoked thereby making an additional 2,540 acres of sunstone-bearing basalt available for mining claim location. Public water reserve withdrawals would be revoked. These reserves could be protected by more site-specific rights-of-way and the 43 CFR 3809 regulations. This would open approximately 1,900 acres of public land to non-metalliferous mineral entry.

Designation of one new SMA (Connley Hills ACEC/RNA) would occur which would require the preparation of a plan of operations before locatable mineral activity could occur in this area. Public land or minerals with moderate or high potential would not be disposed of unless equal values would be obtained. See Table 3-7 for a summary of areas affected by mineral restrictions under this alternative.

Alternative C

The areas identified in Table 3-7 represent existing formal withdrawals from the operation of the mining laws (Map M-2) and areas proposed for withdrawal under this alternative, such as Red Knoll ACEC. (Formal withdrawal approval would be required by the Secretary of the Interior and Congress before most of this area could be officially closed to mineral location). The "Greater Sage-Grouse and Sagebrush Steppe Ecosystem Management Guidelines" call for locatable mineral activity, where a plan of operation is required, to avoid surface occupancy within 0.6 miles of known/occupied greater sage-grouse habitat. This would apply to up to 2,340,360 acres of the planning area.

About 440,916 acres would be subject to the no reclamation stipulation under the wilderness IMP. About 214,547 acres would be subject to a combination of other types of protective stipulations including preparing a plan of operations, seasonal restrictions, access limitations, and special visual design measures. These other restrictions/stipulations apply primarily to areas of big game crucial winter range, suitable WSR's, and VRM class II.

The mineral segregation on the Public Sunstone Area (2,540 acres) would be retained, thereby keeping the

area open to recreational collecting by the public. Existing public water withdrawals would be retained (1,900 acres), closing them to nonmetaliferous mining.

Alternative D

The resource area would be open to locatable mineral activity except for the area (21,064 acres) shown in Table 3-7 as closed. The areas identified as closed represent exiting formal withdrawls from the operation of the mining laws (Map M-2) and areas proposed for withdrawl under this alternative, such as part of Red Knoll ACEC (about 4,600 acres). An additional 468,102 acres would be subject to the "no reclamation" stipulation of the wilderness IMP. About 1,436,196 acres would be subject to a combination of other types of protective stipulations including: preparing a plan of operations, seasonal restrictions, access limitations, and special visual design measures. These other restrictions/stipulations apply primarily to areas of big game crucial winter range, greater sage-grouse breeding habitat, suitable WSR's and VRM Class II. Existing public water reserve withdrawals would be retained (1,900 acres). The mineral segregation on the Public Sunstone Area (2,540 acres) would be retained thereby keeping the area open to recreational collecting by the public.

Alternative E

Actions would be taken to withdraw the entire resource area from locatable mineral entry, subject to existing rights. Because the withdrawal would exceed 5,000 acres, congressional approval would be required.

Management Goal 2—*Provide leasing opportunity for oil and gas, geothermal energy, and solid minerals in an environmentally-sound manner.*

Rationale

The "Mineral Leasing Act" of 1920, as amended, and the "Geothermal Steam Act" of 1970, as amended, provide the opportunity for the public to explore for, develop, and produce publicly-owned leasable minerals. The "Mining and Minerals Policy Act" of 1970 declares that it is the continuing policy of the Federal government to foster and encourage private enterprise in the development of domestic mineral resources.

Section 102 of FLPMA directs that the public land would be managed in a manner which recognizes the Nation's need for domestic sources of minerals and other commodities from the public lands, while managing these lands in a manner that would protect scientific, scenic, historic, archeologic, ecological, environmental, air and atmospheric, and hydrologic values. The Bureau's mineral policy (1984) states that public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is clearly justified in the national interest.

Monitoring

Inspections would be conducted to determine compliance with applicable laws, regulations, conditions of leases, and the requirements of approved exploration and development plans. Where mineral production is occurring, inspections would ensure (1) an accurate accounting of materials removed, (2) proper compensation to the Federal government, (3) protection of the environment, public health and safety, and (4) identification and resolution of salable mineral trespass. Operations in sensitive areas or operations with a high potential for greater than usual impacts would be inspected more frequently.

Management Common to Alternatives A–D

Oil and gas leasing and development would be regulated under 43 CFR 3100, Geothermal Resources Leasing and Development, under 43 CFR 3200, and Solid Mineral Leasing, under 43 CFR 3500, to ensure that all operations are conducted with adequate consideration given to environmental and resource conservation concerns. In order to protect special resource values and special investments, leasing would be subject to lease stipulations shown in Appendix N3. Although the specific wording of the stipulations could be adjusted at the time of leasing, the protection standards described in the appendix would be maintained.

All WSA's would be closed to mineral leasing until such time as Congress makes a decision regarding designation of these areas as wilderness. Areas not designated wilderness could be opened to mineral leasing during the life of this plan. Many areas within the planning area are subject to numerous, overlapping types of mineral leasing restrictions or special stipulations (refer to Appendix N3). This makes determining the amount of area open, closed, or restricted to mineral development difficult. For instance, an ACEC (which may have a no-surface-occupancy stipulation) may partially overlap a WSA (which is closed to leasing). For simplicity, such an area of overlap has been reclassified as closed to reflect the most restric-

tive management measure in place, regardless of how many other types of restrictions may also apply. Any WSA's which overlap with areas where other mineral restriction/stipulations apply, which are later removed from WSA status by Congress, would be managed in accordance with the remaining restrictions. In the example above, an area where a WSA overlaps an ACEC would change from closed to mineral leasing to open to mineral leasing with no surface occupancy. Table 3-7 summarizes mineral leasing restrictions for each alternative.

Management Direction by Alternative

Alternative A

Exploration permits and leases would continue to be issued in those areas currently open to mineral leasing with stipulations as appropriate to protect other resources (Table 3-7). A total of about 493,697 acres, primarily in WSA's, existing ACEC's and Lost Forest RNA/ISA, would be closed to mineral leasing. Of that total, about 18,000 acres in the Lake Abert ACEC would be closed only to sodium leasing. About 612,776 acres would be subject to no-surface-occupancy restrictions. These apply primarily to portions of the Lake Abert and Warner Wetlands ACEC's, areas within 2 miles of greater sage-grouse leks, and known raptor nesting habitat. Other restrictions/stipulations would apply to approximately 759,214 acres of the planning area, primarily in big game crucial winter range, VRM class II, areas with OHV access restrictions, and the remainder of the Warner Wetlands ACEC.

Alternative B

Mineral leasing restrictions would be similar to Alternative A with the following exceptions. The lake-level and total dissolved solid stipulations for mineral leasing on Lake Abert would be eliminated under this alternative in order to facilitate future sodium mining operations. Future leasing of lands eliminated from wilderness consideration would be allowed during the life of the plan. Designation of new SMA's that could restrict or prohibit mineral leasing would be limited to Connley Hills ACEC/RNA.

A total of 492,812 acres would be closed to mineral leasing, mainly within WSA's, Lost Forest RNA, and the northern part of Lake Abert ACEC. About 620,006 acres would be subject to no-surface-occupancy restrictions. About 747,396 acres would be subject to other leasing restrictions/stipulations, primarily in big game crucial winter range, VRM class II, areas with OHV access restrictions, and part of Warner Wetlands ACEC. The remainder of the resource area would be open to mineral leasing.

Alternative C

About 579,187 acres would be closed to mineral leasing, primarily within WSA's and some of the proposed ACEC's. Future leasing of lands eliminated from wilderness consideration would be allowed with necessary constraints to protect resource values. About 2,369,434 acres would be subject to no-surface-occupancy restrictions, primarily in known/occupied greater sage-grouse habitat. An additional 290,189 acres would be subject to other restrictions/stipulations, primarily in big game crucial winter range and areas with OHV access restrictions,.

Alternative D

A total of 1,305,124 acres would be open to mineral leasing. About 498,602 acres in WSA's, WSR's and some ACEC's would be closed to mineral leasing. Most ACEC's would be open to mineral leasing with stipulations to protect relevant and important resources. Future leasing of lands eliminated from wilderness consideration would be allowed with necessary constraints to protect resource values. Another 776,436 acres would be subject to no-surface-occupancy restrictions, primarily in some ACEC's and all greater sage-grouse breeding habitat. Other restrictions/stipulations would apply to approximately 658,648 acres of the planning area, primarily in big game crucial winter range, VRM Class II, areas with OHV access restrictions, and the remainder of the Warner Wetlands ACEC.

Alternative E

All mineral estate (3,238,810 acres) in the planning area would be closed to energy and mineral leasing.

Management Goal 3—*In an environmentally-sound manner, meet the demands of local, state, and Federal agencies, and the public, for mineral material from public lands.*

Rationale

The "Materials Act" of 1947, as amended, authorized the disposal of mineral materials such as sand, gravel, stone, clay, and cinders. The "Mining and Minerals Policy Act" of 1970 declares that it is the continuing

policy of the Federal government to foster and encourage private enterprise in the development of domestic mineral resources.

Section 102 of FLPMA directs that the public land would be managed in a manner which recognizes the Nation's need for domestic sources of minerals and other commodities from the public lands, while managing these lands in a manner that would protect scientific, scenic, historic, archeologic, ecological, environmental, air and atmospheric, and hydrologic values. The Bureau's mineral policy (1984) states that public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is clearly justified in the national interest.

Monitoring

Inspections of salable minerals operations would be conducted in accordance with BLM policy contained in BLM Manual Section 3600, and as outlined in BLM Washington Office Instruction Memorandum No. 99-021. Inspections would be conducted to determine compliance with applicable laws, regulations, and the requirements of approved mining plans. Where mineral production is occurring, the goals of the salable mineral inspection and enforcement/production verification program are: (1) an accurate accounting of materials removed, (2) proper compensation to the Federal government, (3) protection of the environment, public health and safety, and (4) identification and resolution of salable mineral trespass. Operations in sensitive environmental areas or operations with a high potential for greater than usual impacts would be inspected more often.

Management Common to All Alternatives

Mineral material exploration and development is regulated under 43 CFR 3600. Throughout the alternatives, effort would be made to work with the State and counties to rehabilitate exhausted rock sources and relinquish any material site rights-of-way and free use permits no longer needed. All surface disturbance would be reclaimed at the earliest feasible time. The standards that govern these activities are shown in Appendix N3. Table 3-7 shows the restrictions and lands open and closed to mineral location under each alternative.

All WSA's would be closed to mineral material disposal until Congress makes a decision regarding designation of these areas as wilderness. Areas not designated as wilderness could be made available for mineral disposal during the life of the plan. Many areas within the planning area are subject to numerous, overlapping types of mineral disposal restrictions or special stipulations (refer to Appendix N3). This makes determining the amount of area open, closed, or restricted to mineral development difficult. For instance, an ACEC (which may have an access restriction) may partially overlap a WSA (which is closed to mineral disposal). For simplicity, such an area of overlap has been reclassified as closed to reflect the most restrictive management measure in place, regardless of how many other types of restrictions may also apply. Any WSA's which overlap with areas where other mineral restriction/stipulations apply, which are later removed from WSA status by Congress, would be managed in accordance with the remaining restrictions. In the example above, an area where a WSA overlaps an ACEC would change from closed to mineral disposal to open to mineral disposal with access restrictions.

Management Direction by Alternative

Alternative A

Mineral material disposal would continue from existing pits and quarries, and from potential sources currently open to mineral material disposal. A total of about 975,044 acres would remain closed to mineral material disposal under this alternative, primarily in WSA's, portions of ACEC's, areas within 2 miles of greater sage-grouse leks, and the Sunstone Public Collection Area. However, use of the southern portion of the Devils Garden lava flow as a common use area for the sale of decorative stone would be pursued if this area is dropped from wilderness consideration during the life of the plan. An additional 872,192 acres would have other types of restrictions apply, primarily associated with big game crucial winter range, VRM class II, raptor nesting habitat, areas with OHV access restrictions, and most of Lake Abert ACEC (Table 3-7).

Alternative B

Salable mineral disposal under this alternative would be similar to Alternative A except as described below. Mineral material disposal would be allowed from all public lands, except those shown as closed under this alternative in Table 3-7. A total of about 969,224 acres would be closed to mineral material disposal, primarily in WSA's, Lost Forest RNA, areas within 2 miles of greater sage-grouse leks, and parts of Lake Abert and Warner Wetlands ACEC's. However, any lands elimi-

nated from wilderness consideration could be opened to mineral disposal during the life of the plan. Should this occur, common-use areas for the disposal of decorative stone and cinders in the Devils Garden, Squaw Ridge, and Four Craters lava flows would be established, as the best quality decorative stone within the planning area is known to occur in these areas, and cinders are needed for local roads.

An additional 874,238 acres would have other types of restrictions apply, primarily associated with big game crucial winter range, VRM class II, raptor nesting habitat, areas with OHV access restrictions, and parts of Lake Abert and Warner Wetlands ACEC's (Table 3-7).

Community pits in high-demand areas would be established when it is not possible to make sales from state or county sources. Possible future community site designations include Cougar Mountain pit and the Paisley, Westside, and Summer Lake areas. Except for the Connley Hills ACEC/RNA, no new SMA's would designated which would restrict or prohibit mineral material disposal. The BLM would work with state and county road departments to find rock sources that meet the demand for public projects and mineral material sale to the public.

Alternative C

Approximately 2,810,643 acres would be closed to mineral sale, mainly in WSA's, existing and proposed ACEC's, all known/occupied greater sage-grouse habitat, and proposed WSR's. Mineral material disposal would be allowed on a case-by-case basis in WSA's eliminated from wilderness consideration in the future, with priority consideration given to protecting sensitive resources.

An additional 312,623 acres would have other types of restrictions apply, primarily associated with big game crucial winter range, areas with OHV access restrictions, VRM Class II, raptor nesting habitat, and Lake Abert ACEC (Table 3-7).

Alternative D

The resource area would be open to mineral material disposal, except for those areas identified in Table 3-7 as closed (1,161,052 acres) under this alternative. Areas closed to mineral sale involve mainly WSA's, existing and proposed ACEC's, greater sage-grouse breeding habitat, and proposed WSR's. Mineral material disposal from lands eliminated from wilderness consideration in the future would be allowed on a case-by-case basis with consideration given to protecting sensitive resources.

An additional 772,634 acres would have other types of restrictions apply, primarily associated with big game crucial winter range, VRM class II, raptor nesting habitat, areas with OHV access restrictions, and Lake Abert ACEC (Table 3-7).

Alternative E

The entire resource area (about 3,238,810 acres), including existing pits and quarries, would be closed to mineral material disposal, except where required by law or where essential for critical road construction and emergencies to protect human safety.

Lands and Realty

Management Goal 1—*Retain public land with high public resource values. Consolidate public land inholdings and acquire land or interests in land with high public resource values to ensure effective administration and improve resource management. Acquired land would be managed for the purpose for which it was acquired. Make available for disposal public land within Zone 3 by State indemnity selection, private, or state exchange, "Recreation and Public Purpose Act" lease or sale, public sale, or other authorized method, as applicable.*

Rationale

Section 102 of FLPMA requires that public land be retained in Federal ownership unless disposal of a particular parcel would serve the national interest. Acquisition of land to consolidate ownership patterns would provide for more efficient land management and administration for both public and private landowners. Retention and acquisition of land containing significant resource values would provide for long-term protection and management of those values.

Monitoring

Progress on land tenure adjustment actions would be monitored through normal BLM accomplishment tracking processes. Periodic reports would be developed, identifying acres transferred within the various land tenure zones.

Management Common to All Alternatives

Newly acquired lands would be managed for the highest potential purpose for which they are acquired. Acquired lands within ACEC's or other SMA's which have unique or fragile resources would be managed the same as the SMA. Lands acquired without special values or management goals would be managed in the same manner as comparable surrounding public lands.

Land tenure would be based on three zones: (1) Zone 1 land is identified for retention in public ownership and includes high values lands such as WSA's and ACEC's; (2) Zone 2 land has been identified generally for retention and consolidation of ownership and includes BLM-administered lands outside of Zone 1 areas; and (3) Zone 3 land generally has low or unknown resource values and meets the disposal criteria of section 203 of FLPMA and is potentially suitable for disposal by a variety of means (see Appendix O1 for a complete explanation of land tenure). Land tenure adjustments in any of the zones would generally occur under the authority of FLPMA; however, under certain circumstances, other authorities may be applicable as well. The disposition of Bankhead-Jones lands would be accomplished by FLPMA sale or exchange and not by "Recreation and Public Purpose Act" or by State In Lieu Selection.

Public access would be maintained or improved through all land tenure adjustment transactions.

All past and future public lands sold or exchanged under 43 U.S.C. 682(b) ("Small Tracts Act"), 43 U.S.C. 869 ("Recreation and Public Purposes Act"), 43 U.S.C. (Sales), or 43 U.S.C. 1716 (Exchanges), where minerals are reserved to the United States, shall be opened to operation under the mining laws upon the publication of opening orders in the *Federal Register* informing the public of such action.

Management Direction by Alternative

Alternative A

Land tenure adjustments would be consistent with existing land use planning with emphasis on acquiring land with high public resource values such as lands within ACEC's or WSA's, T&E species habitat, or riparian/wetland areas, etc.

Approximately 41,500 acres of public land in Zone 3 would be available for disposal as specifically identified in existing land use planning on Map L-1, and as described in Appendix O2. Land could be disposed of through a variety of means including but not limited to sale, exchange, and "Recreation and Public Purpose Act" lease or patent.

Alternative B

Public land holdings in Zone 1 would be retained or increased with emphasis on acquiring land that would facilitate commodity production. Under certain circumstances, disposal of small parcels of public land would be permitted in Zone 1 to meet other resource objectives.

Public land holdings in Zone 2 would be retained or increased with special emphasis on land exchanges that benefit commodity production. Under certain circumstances, disposal of public land may be permitted in Zone 2 to meet other resource objectives.

Approximately 54,500 acres of public land in Zone 3 as specifically identified on Map L-3, and as described in Appendix O2, would be available for disposal.

Approximately 200 acres are identified for disposal by direct sale to Lake County or other civic-related entity(s) with county approval for Fort Rock community expansion purposes only. An additional 200 acres is identified for direct sale to Native American Tribal entity(s) for reinternment purposes only. The Oregon Department of Parks and Recreation has requested possible disposal consideration of approximately 28,750 acres of public and Bankhead-Jones land northwest of Fort Rock, Oregon, adjacent to the Deschutes National Forest. The purpose of the consideration is for the reestablishment of the historic Fort Rock Ranch.

Alternative C

Public land holdings in Zone 1 would be retained or increased with emphasis on acquiring land with high public resource values. Actions would be pursued to acquire lands from owners willing to dispose of private or state lands within or adjacent to WSA's or ACEC's. Under certain circumstances, disposal of small parcels of public land would be permitted in Zone1 in order to achieve other resource objectives.

Public land holdings in Zone 2 would be retained or increased with special emphasis on acquiring land with high public resources values. Actions would be pursued to acquire lands from owners willing to dispose of private or state lands within or adjacent to WSA's or

ACEC's. Under certain circumstances, disposal of public land would be permitted in Zone 2 in order to achieve other resource objectives.

Approximately 7,500 acres of public land in Zone 3 as specifically identified on Map L-4, and as described in Appendix O2, would be available for disposal.

Approximately 200 acres are identified for disposal by direct sale to Lake County or other civic-related entity(s) with county approval for Fort Rock community expansion purposes only. An additional 200 acres is identified for direct sale to Native American Tribal entity(s) for reinternment purposes only.

Alternative D

Management actions under this alternative would be the same as under Alternative C.

Alternative E

Public land would be considered for disposal on a case-by-case basis only.

Management Goal 2—*Meet public needs for land use authorizations such as rights-of-way, leases, and permits.*

Rationale

Rights-of-way and other land uses are recognized as major uses of the public lands and are authorized pursuant to sections 302 and 501 of FLPMA.

Section 503 of FLPMA provides for the designation of rights-of-way corridors and encourages utilization of rights-of-way in-common to minimize environmental impacts and the proliferation of separate rights-of-way. Bureau policy is to encourage prospective applicants to locate their proposals within corridors. Designation of avoidance areas—those areas that would be avoided by new rights-of-way unless there are no other options—would provide early notice to potential applicants when they are planning rights-of-way or other land use projects. Only facilities and uses would be permitted in avoidance areas which are consistent with the special designation associated with that area. Designation of exclusion zones—those areas where no new rights-of-way would be allowed—would provide protection of lands and resources, which have values which are not compatible with rights-of-way or other land uses.

The United States' potential liability, under various hazardous materials statutes, would be limited if disposal of waste, both hazardous and nonhazardous, are prohibited on public lands. Private lands are generally available for private waste disposal. If a bonafide public need for new waste disposal sites arise, land could be made available by sale or exchange. Currently, there are no authorized waste disposal sites on public lands in the LRA.

Monitoring

Application of this decision would be monitored as proposals are evaluated through the NEPA process. Individual projects would be monitored to ensure compliance with the terms and conditions of the authorizing document and through the normal BLM accomplishment tracking process.

Management Common to All Alternatives

Applications for rights-of-way, leases, permits, and other forms of land-use authorization, with the exception of rights-of-way corridors within WSA's and SMA's, which are addressed separately, would be processed in a timely manner, on a case-by-case basis, in compliance with the NEPA process. In accordance with current policy, land-use authorizations may not be issued for any use which would involve disposal or storage of materials which could contaminate the land (i.e., landfills, hazardous waste disposal sites, etc.).

With proper NEPA compliance, the upgrading/expansion of existing rights-of-way and issuance of new right-of-way would be allowed within existing corridors crossing designated rights-of-way exclusion and avoidance areas. Parallel and/or perpendicular access roads across designated right-of-way exclusion and avoidance areas for construction and maintenance of facilities located within existing corridors would also be allowed. This management would be common to Alternatives A–D.

Realty-related unauthorized uses on public land would be detected, confirmed, and abated on all lands. Upon resolution, unauthorized uses on public land which do not conflict with other significant resource values would be authorized or terminated, as appropriate. Sites affected by unauthorized uses would be rehabilitated, as determined necessary.

Generally, there is no regulatory width that dictates rights-of-way corridors. A width of 2,000 feet—1,000 feet each side of centerline—is considered an appropri-

ate/reasonable width to provide engineering flexibility, system compatibility, and reliability factors, and would be used for purposes of this plan. Variation from the 2,000-foot width may occur within the range of alternatives.

Management Direction by Alternative

Alternative A

Corridor designation would continue as necessary, consistent with existing land-use planning.

Some WSA's and the Buck Creek Watchable Wildlife Site are considered rights-of-way exclusion areas except for rights-of-way needed to provide reasonable access to and use of non-Federal inholdings consistent with BLM IMP. The remaining WSA's, Lost Forest RNA, and the Lake Abert ACEC are considered rights-of-way avoidance areas. See Table 3-8 and Map L-2 for acres of right-of-way exclusion and avoidance areas by alternative.

Alternative B

Applicants for electrical transmission lines greater than 69 kilovolts, all mainline fiber optics facilities, and pipelines greater than 10 inches in diameter would be encouraged to locate their facilities within designated corridors.

Portions of the Lost Forest/Sand Dunes/Fossil Lake ACEC/RNA, Lake Abert ACEC, Connley Hills ACEC, the Buck Creek Watchable Wildlife Site would be rights-of-way avoidance areas. All WSA's would be rights-of-way exclusion areas (Map L-6). See Table 3-8 for acres of right-of-way exclusion and avoidance areas by alternative.

All existing transdistrict electrical transmission lines identified by the "Western Regional Corridor Study," and some county roads would be designated as right-of-way corridors. Nominal corridor width would be 1,000 feet on each side of centerline of existing facilities, except where the alignment forms the boundary of a SMA, where the width would be 2,000 feet on the side opposite that boundary. Corridor widths may vary dependent upon project size and would be determined on a case-by-case basis.

Alternative C

All linear rights-of-way for electrical transmission lines greater than 69 kilovolts, all mainline fiber optics facilities, and all pipelines greater than 10 inches in diameter would be located within designated corridors.

All ACEC's, WSR's, the Buck Creek Watchable Wildlife Site, NRHP Districts, and WSA's would be rights-of-way exclusion zones (Map L-7) except for rights-of-way needed to provide reasonable access to and use of non-Federal inholdings, consistent with BLM IMP. All greater sage-grouse habitat would be considered a right-of-way avoidance zone. See Table 3-7 for acres of right-of-way exclusion and avoidance areas by alternative.

All existing transdistrict electrical transmission lines identified by the "Western Regional Corridor Study," and some county roads would be designated as rights-of-way corridors. Nominal corridor width would be 500 feet on each side of centerline of existing facilities, except where the alignment forms the boundary of a SMA, where the width would be 1,000 feet on the side opposite that boundary. Corridor widths may vary dependent upon project size and would be determined on a case-by-case basis.

Alternative D

New rights-of-way applications and existing rights-of-way corridors would be managed the same as Alternative B.

All ACEC's, WSR's, the Buck Creek Watchable Wildlife Site, and greater sage-grouse breeding habitat would be designated right-of-way avoidance areas except for rights-of-way which would not conflict with management objectives for the area. WSA's and NRHP districts would be considered exclusion areas (Map L-8). See Table 3-7 for acres of right-of-way exclusion and avoidance areas by alternative.

Alternative E

The entire planning area would be considered a right-of-way exclusion area, except for existing rights-of-way.

Management Goal 3—*Acquire public and administrative access to public land where it does not currently exist.*

Rationale

Due to the generally fragmented nature of public lands in some parts of the resource area, the need to acquire legal public and administrative access is required to

Table 3-8.—*Acres of rights-of-way exclusion and avoidance areas*

Rights-of-way restriction	Alternative				
	A	B	C	D	E
Avoid (acres)	68,257	58,297	2,201,664	794,272	0
Reason for restriction	■Parts of 2 ACEC's [1]	■Parts of 3 ACEC's ■1 Watchable Wildlife site	■Greater sage-grouse habitat [2] ■Big game winter range [3] ■2 WSR's	■Greater sage-grouse breeding habitat ■Big game winter range ■15 ACEC's ■1 WSR ■3 NRHP districts ■1 Watchable Wildlife site	
Exclude (acres)	510,722	485,898	696,545	487,050	3,161,326
Reason for restriction	■13 WSA's [4] ■ISA [4] ■4 sensitive resource areas	■13 WSA's ■1 ISA	■13 WSA's ■1 ISA ■15 ACEC's ■3 NRHP districts ■1 Watchable Wildlife site	■13 WSA's ■1 ISA	■All BLM lands in planning area except existing rights-of-way corridors

[1] "High Desert Management Framework Plan Amendment for Lake Abert ACEC in Lake County, Oregon" (1996).
[2] "Greater Sage-Grouse and Sagebrush-Steppe Ecosystems Management Guidelines" (2000).
[3] "High Desert Management Framework Plan" (1983).
[4] Wilderness IMP (1995).

ensure continued effective administration and public use of these lands. This need becomes more acute as public use of these lands increases and as landowners become more aware of the value of public and private land for recreation and other purposes. Land tenure adjustment actions (exchanges or fee purchases) can be a valuable tool for access acquisitions. However, without careful review, lands actions, particularly exchanges, can result in lost access. Other tools can also be utilized, such as constructing new roads around lands where access is restricted and the cost associated with acquisition excessive, or where such acquisition is not feasible.

Monitoring

Public access needs would be reviewed periodically. Access acquisition would be monitored through normal BLM accomplishment tracking processes. Periodic reports would be developed identifying access acquired.

Management Common to All Alternatives

SMA's would receive first priority for both fee title and easement acquisition, with the North Lake Special Recreation Management Area receiving second priority. Shifts in priority may occur dependent upon the level of necessity.

Management Direction by Alternative

Alternative A

Legal public or administrative access, including conservation and scenic easements, would be acquired from willing landowners, on a case-by-case basis as the need arises. Emphasis would be placed on providing access for BLM administrative facilities and program-related activities.

New roads would be constructed around private lands where easement acquisition is not feasible or desirable.

Alternative B

Legal public or administrative access would be acquired from willing landowners where public demand or an administrative need exists. Emphasis would be placed on providing administrative access to public land with high mineral, timber, grazing, or recreational value.

New roads would be constructed around private lands where easement acquisition is not feasible or desirable.

Alternative C

Legal public or administrative access would be acquired from willing landowners, where public demand or an administrative need exists.

New roads around private lands would be constructed where easement acquisition is not feasible or desirable, when it supports the protection of natural values.

Alternative D

Legal public or administrative access would be acquired from willing landowners, where public demand or an administrative need exists. Emphasis would be placed on providing access to areas containing high public values, when it supports the protection of natural values.

New roads would be constructed around private lands where easement acquisition is not feasible or desirable.

Alternative E

New access rights would not be acquired unless prescribed by law. No road construction would occur unless prescribed by law and/or for the protection of public health and safety.

Management Goal 4—*Utilize withdrawal actions with the least restrictive measures necessary to accomplish the required purposes.*

Rationale

Section 204 of FLPMA gives the Secretary of the Interior the authority to make, modify, extend, or revoke withdrawals and mandates review of withdrawals.

Interior Departmental Policy (DM 603) further requires that:

1) All withdrawals shall be kept to a minimum, consistent with the demonstrated needs of the agency requesting the withdrawals.

2) Lands shall be available for other public uses to the fullest extent possible, consistent with the purposes of the withdrawal.

3) A current and continuing review of existing with-

drawals shall be instituted.

Monitoring

Actions would be monitored through the normal BLM accomplishment tracking process.

Management Common to All Alternatives

Withdrawal review continuations, modifications, and revocations would continue in the future, as the need arises.

Other agency requests for new withdrawals, relinquishments, and modification would be considered on a case-by-case basis.

Management Direction by Alternative

Alternative A

Requests for new withdrawals and withdrawal relinquishments or modifications would be considered on a case-by-case basis.

Alternative B

No new lands would be withdrawn from the public land, mining, and mineral leasing laws unless required by law. All existing public water reserves would be revoked upon completion of the required revocation process, NEPA-related compliance, and with BLM Oregon and Washington Office review and approval.

Alternative C

Under this alternative, the entire Red Knoll ACEC would be withdrawn from the public land and mining laws.

Alternative D

Approximately 4,600 acres of the Red Knoll ACEC would be withdrawn from the public land and mining laws under this alternative.

Alternative E

Withdraw the entire resource area from the public land mining and mineral leasing laws.

Roads/Transportation

Management Goal —*Maintain existing roads on the resource area transportation plan and other roads to provide administrative or public access to public land. Construct new roads using best management practices (BMP's) and appropriate mitigation to provide administrative, permitted, and recreational access as needed. Close roads that are not longer needed or that are causing resource damage.*

Rationale

Access is necessary for BLM personnel to administer the various resource management programs on public land including livestock grazing, mining, wildlife habitat management, watershed management, recreation management, and numerous other programs. Access is also an important factor in fire suppression and fire management. Roads on BLM-administered lands are used by permitted users such as miners and livestock operators. Roads are also heavily used by recreationists for dispersed recreation activities such as hunting, fishing, camping, rockhounding, OHV driving, and sightseeing, etc. Providing and maintaining access to the public lands is an important public service provided by BLM.

Any roads on the transportation plan which are not needed for administrative or public access do not need to remain open. Likewise, any roads that are causing significant resource damage need to be closed and rehabilitated.

Monitoring

Roads are usually monitored in conjunction with the conduct of other programs. Roads are also monitored, usually on an annual basis to determine maintenance needs. This information is factored into the budget request for the upcoming fiscal year. The amount of road maintenance done each year is based on the budget received by the Lakeview Resource Area Office.

Monitoring of any closed roads would be done in conjunction with monitoring other resources and uses such as watershed condition or OHV use. The purpose of the monitoring would be to ensure that closed roads are not being used and that resource damage such as erosion is not occurring.

Actions Common to All Alternatives

Any roads proposed to be closed would be reviewed by an interdisciplinary team to determine need for the road, resource damage being caused, appropriate closure means, alternative access available, etc. Appropriate NEPA documentation would then be completed if it is determined the road should be closed. Closures would consist of signing and physically blocking access if needed. Rehabilitation could consist of simply closing a road and allowing natural regrowth of vegetation to occur, or it could consist of plowing or ripping the road and seeding with an appropriate seed mix.

The draft 2000 "Washington and Eastern Oregon Districts Transportation Management Plan" would serve as the LRA transportation management plan when that document is final and approved. A supplemental transportation management plan specific to the resource area and tiered to the larger plan may subsequently be prepared if necessary.

An estimated amount of road construction is shown for each alternative for the the life of the paln. This estimate is based on actual road construction for the past 10 years and is for analysis purposes only. It is meant to include only BLM construction and does not include construction that may result from a major project such as a mine devlopment, oil and gas exploration and development, or major utility line.

Any new roads constructed or trails developed as a result of such a project would be reclaimed after the project is completed if they are not needed for future access such as monitoring or maintenance.

Management Direction By Alternative

Alternative A

Approximately 100 miles of roads would be maintained annually based on priority determinations and the amount of annual road maintenance budget. New roads would be constructed on an as-needed basis, but new construction would be minimal. New roads could be constructed around private property to allow access to public land. For analysis purposes and based on road construction the past 10 years, new road construction is expected to be less than 20 miles over the life of the plan.

Existing roads would remain open. Any proposed road closures would be considered on a case-by basis.

Alternative B

Approximately 100 miles of roads would be maintained annually based on priority determinations and the amount of annual road maintenance budget. Management would be the same as under Alternative A, except that new roads would be constructed to facilitate commodity production and recreation access. New roads would be allowed for major projects such as mineral development, power generating plants, electrical transmission lines, and pipelines. For analysis purposes, it is estimated that no more than 30 miles of new roads would be constructed by BLM over the life of the plan. New road construction would meet BMP's to protect soils and watersheds. BMP's are contained in Appendix D

Roads that are causing resource damage and that are no longer needed for access to facilitate commodity production would be considered for closure.

Alternative C

Approximately 100 miles of roads would be maintained annually based on priority determinations and the amount of annual road maintenance budget. The emphasis of road maintenance would be to protect and maintain resources. New construction would be considered on a case-by-case basis and would meet BMP's for road construction as outlined in Appendix D. New roads would be allowed for major projects such as mineral development, power generating plants, and transmission lines, etc., if such projects are permitted. Roads could be constructed around private property to provide access to public land. For analysis purposes, it is estimated that no more than 20 miles of new roads would be constructed by BLM over the life of the plan.

Roads on the transportation plan, as well as roads not on the plan, which are no longer needed for administrative or public access or which may be causing resource damage such as erosion, would be noted and actions would be taken to close and rehabilitate the road or to correct the cause of the resource damage. Approximately 450 miles of roads in ACEC's would be closed.

Alternative D

Management under this alternative would be the same as under Alternative C. Approximately 372 miles of roads in SMA's would be closed.

Alternative E

Roads would be maintained only as needed to provide for human health and safety. No new roads would be constructed unless required by law.

Road closures would be the same as under Alternative C.

Chapter 4 — Environmental Consequences

Introduction

This chapter analyzes the environmental impacts and effects that are projected to occur as a result of implementing land management actions described for each alternative in Chapter 3–Alternatives. The baseline used for project impacts is the current condition or situation described in Chapter 2–Affected Environment. Impacts are projected for the short term (0 to 10 years unless otherwise noted) and for the long term (10 to 20 years). A comparison of management directives for each of the alternatives is shown in Table 3-1 in Chapter 3. A comparison of impacts is shown in Table S-1 in the Summary at the beginning of this document.

Each of the resource programs or management activities that could impact other resources or values are analyzed by program. There are some programs that would have the same impact across all alternatives, or would have little or no effect and do not need analysis.

The analysis for each alternative is presented by resource and organized into four sections:

Management Goals: These are defined in Chapter 3 and would be the same under each alternative.

Analysis of Impacts: This is a description of the possible impacts, both beneficial and adverse, from land-use allocation or management action to the resource being analyzed. The impact or change is compared to the current management situation, Alternative A. For ease of reading, analysis shown in Alternative A may be referenced in following alternatives with such statements as "impacts would be the same as Alternative A," or "impacts would be the same as Alternative A, except for . . ." as applicable.

Summary: At the end of each resource will be a summary comparison of impacts under each alternative and how each of the alternatives meet the management goal(s).

Secondary, Indirect, and Cumulative Impacts: The final section under each resource is a description of secondary, indirect, and cumulative impacts of the past, present, and reasonably-foreseeable future actions of all the alternatives. This section also considers impacts of other agency actions as well as actions on private land within or adjacent to the planning area.

Assumptions

Several general assumptions were made to facilitate the analysis of the projected impacts. The assumptions listed below are common to all alternatives. Other assumptions specific to a particular resource are listed under that resource.

- Changes in Bureau of Land Management (BLM) policies have been made since the current land-use plans were approved. This includes such things as the 1997 "Standards for Rangeland Health and Guidelines for Livestock Grazing Management." All alternatives would maintain the vegetation resource and meet needs for water, nutrient, and energy cycling.
- Funding and personnel would be sufficient to implement any alternative described.
- Funding would be basically the same across all alternatives.
- Monitoring studies would be completed as indicated and adjustments or revisions would be made as described in the Adaptive Management section in Chapter 3.
- Appropriate maintenance would be carried out to maintain the functional capability of all developments.
- The resource management plan (RMP)/environmental impact statement (EIS) would remain in effect for 15 to 20 years.

Critical Elements of the Human Environment

The following critical elements of the human environment are addressed in Chapter 4: air quality, floodplains, cultural/paleontological resources, prime or unique farmlands, Native American religious concerns, threatened or endangered (T&E) species, areas of critical environmental concern (ACEC's), designated or potential wild and scenic rivers (WSR's), wilderness or wilderness study areas (WSA's), and environmental justice. There are no identified significant impacts to any of these elements. The alternatives call for varying degrees of resource use and protection. As a result, there are varying degrees or forms of protective management or mitigation for some of these resources or

land use allocations. These critical elements will also be considered, as appropriate, in site-specific project design and implementation.

Plant Communities

Shrub Steppe

Management Goal 1—*Restore, protect, and enhance the diversity and distribution of desirable vegetation communities, including perennial native and desirable introduced plant species. Provide for their continued existence and normal function in nutrient, water, and energy cycles.*

Management Goal 2—*Protect healthy, functioning ecosystems consisting of native plant communities. Restore degraded high-potential landscapes and decadent shrublands.*

Assumptions

Characteristics used to analyze the degree to which vegetation communities meet the desired range of conditions and thus rangeland vegetation management objectives, are described in Figure 4-1.

Reduced vegetation structure and ground cover leads to increased soil erosion rates. Soil erosion rates on shrub steppe are highly dependent on the proportion of the soil surface protected from raindrop impact by vegetation (Meeuwig 1970). Erosion rates increase exponentially as plant cover decreases (Meeuwig 1970).

Prescribe burn treatments would create a mosaic pattern of islands and stringers and maintain structure (connectivity) and desired diversity. Wildland fire may accomplish these patterns, but because of cheatgrass and exotic annuals, large areas are often burned instead of a mosaic of burned and unburned areas.

The alternatives have the potential to affect vegetation in terms of the relative abundance of species within communities, the relative distribution of plant communities, and the relative occurrence of seral stages of those communities. However, implementation of any alternative would not result in the complete elimination of a plant species, plant community, or seral stage. Management actions would not intentionally eliminate a special status plant species.

Analysis of Impacts

Alternative A

Under this alternative, the ecological condition of the shrub steppe could be improved and there could be an increase of forage production through the development and implementation of economically feasible grazing systems and range improvements.

In areas such as the Beaty Butte Allotment, not all of the animal unit months (AUM's) are utilized; however, livestock tend to concentrate in small areas around available water causing concentrated overutilization. Methods to move and disperse livestock would benefit the diversity and condition of the steppe around such sites. Implementation of vegetation manipulation projects must be consistent with existing management objectives. Full suppression of wildland fire outside of the Fort Rock Fire Management Area would not allow for wildland fire use to improve resources. Use of prescribed fire would be on a case-by-case basis.

Areas that are burned by wildland fire would be rehabilitated or revegetated to protect soil, water, and vegetation resources or to prevent unacceptable damage (such as introduction of noxious weeds and cheatgrass). Resting rehabilitated areas for two growing seasons allows vegetation to reestablish, allows litter to build-up on the soil, and reduces erosion. Two seasons of rest can also make the disturbed area less susceptible to the invasion of noxious weeds.

Maintenance of vegetative composition of nonnative seedings would ensure continued forage production for the purpose established. Some stands of seeded nonnative perennial species would continue to be managed primarily for forage production, and would make minimal progress toward supporting greater species or structural diversity. Connectivity of big sagebrush cover may be reduced.

Watershed improvement for both function and processes maintain or enhance soil conditions in most cases. Management activities and uses for water resources usually meet minimum construction standards as does construction and maintenance of roads. If carried out correctly, there is minimal or no damage to shrub steppe vegetation communities. If flooding occurs due to natural causes or if related to construction, rehabilitation could be carried out swiftly and effectively.

Integrated weed management actions would slow the spread of established stands of noxious weeds and

reduce the establishment of new infestations. Emphasis on commodity procuction, including recreational use, off-highway vehicle (OHV) use, livestock production, mineral exploration, traffic, and other uses would increase localized areas of soil disturbance and increase the vectors of seed dispersal, impacting sagebrush steppe communities and soils.

Exploration, location, development, and production of locatable minerals in this alternative can cause changes in species composition and relative abundance of species in the vegetation on the site despite plans of operation. Even after reclamation efforts, it would be unlikely that environmental conditions supporting the predisturbance plant community would be restored. The scale of these effects would vary across the alternatives as larger areas would have either surface restrictions on energy and mineral exploration and development, or no-surface-occupancy stipulations. Mitigation measures would be programmed into the plan of operations and soils can be "banked" for future reclamation, and native seeds can be gathered and grown for future seed sources from the site (such as at Tucker Hill mine).

Under this "no action" alternative, carrying capacities and seasons of use for livestock in some areas would continue at a level that would provide for a diversity of seral stages of rangeland plant communities, while other areas would support the earlier seral stages of rangeland vegetation types resulting from localized problems in range management. Under this alternative, disturbance associated with relatively high carrying capacities and long seasons of use for livestock would result in a landscape dominated by the low structural diversity (dominated by annual grasses and forbs) characteristic of the earlier seral stages of rangeland vegetation.

The use of livestock grazing systems would have both positive and negative impacts on vegetation, depending on the system and the vegetation community.

The rest/rotation system is both the most common livestock grazing system (56 percent of acres grazed) in use in the resource area and also the system that would be expected to most improve key species composition. Therefore, the vegetation composition on over half the acres in the resource area would potentially improve under this alternative.

The key herbaceous vegetation composition would either be improved or maintained under the other five grazing systems; this accounts for 36 percent of the acres under a grazing system in the resource area. Under this alternative, about 7 percent of the acreage in the resource area would show a short-term decrease in species composition as a result of being grazed under a spring/summer grazing system. This is due to the fact that forage species would be grazed during their growing season.

The spring/fall and deferred grazing systems would result in a decrease in palatable woody vegetation such as willows, quaking aspen, and antelope bitterbrush. These grazing systems are found on about 4 percent of the acres that are grazed in the resource area. The difference in the alternatives is the rate at which the palatable woody species composition would decline.

A summary of grazing impacts to key species vegetation by type of grazing system and season of use is shown in Table 4-1. Specific impacts of livestock grazing to the various plant communities by grazing system are fully discussed in Appendix E3.

Regarding biological crusts, stocking levels and season of use should be ascertained because livestock grazing has a different effect on crusts depending on soil types. Livestock use that does not implement rest-rotation strategies that minimize frequency of surface disturbance during dry seasons and maximizes periods between disturbances should be changed to reduce impacts to biological soil crusts (USDI-BLM and USGS 2001).

Wild horse management areas pose different problems and need to be kept at appropriate management levels for all uses (horses, wildlife, plant community health, livestock, and recreation) in order to meet specific management objectives. Where appropriate management levels are exceeded and during drought, patches and larger areas of shrub steppe can be destroyed. Little information exists on the effect of horse populations on biological crusts; however, hoof disturbances along regular trails could be very long lasting and lead to soil degradation, loss of crust cover, and loss of water infiltration.

Under this alternative, no new special management areas (SMA's) would be designated (such as ACEC's or WSR's), thus eliminating the possibility of special protective management of new research natural areas (RNA's), ONHP plant community cells (emphasizing shrub steppe), and BLM special status plant species habitats. The habitat management plan for the Black Hills would restrict OHV use; as would the emergency closures for Table Rock and South Green Mountain. All three closures are to protect BLM sensitive plant species.

Table 4-1.—*Livestock grazing impacts to key species vegetation by type of grazing system and season of use*

Type of grazing	Alternative A	Alternative B	Alternative C	Alternative D
Winter	Would improve or maintain key species composition because of dormant season grazing.	Same as Alternative A, except composition of palatable woody vegetation would decrease.	Same as Alternative A.	Same as Alternative A.
Spring	Would improve or maintain key species composition as plants have time and soil moisture to reach full growth, produce seed, and replenish reserves.	Would maintain key species composition as plants have time and soil moisture to reach full growth, produce seed, and replenish reserves.	Same as Alternative A.	Same as Alternative A.
Spring/summer	About 60% of acres would have decreases in key species composition—this results from continuous heavy use in concentration areas such water sources, fences, and bottom lands.	About 66% of acres would have decreases in key species composition—this results from continuous heavy use in concentration areas such water sources, fences, and bottom lands.	About 48% acres would have decreases in key species composition—this results from continuous heavy use in concentration areas such water sources, fences, and bottom lands.	Same as Alternative A.
Spring/fall	Would only maintain existing key herbaceous species composition; composition of palatable woody vegetation would decrease.	Same as Alternative A, except the loss of palatable woody species would be accelerated.	Same as Alternative A, except the loss of palatable woody species would be at a slower rate.	Same as Alternative A.
Deferred	Would improve or maintain key herbaceous species composition because of dormant season grazing; composition of palatable woody vegetation would decrease.	Same as Alternative A, except the loss of palatable woody species would be accelerated.	Same as Alternative A, except the loss of palatable woody species would be at a slower rate.	Same as Alternative A.

Type of grazing	Alternative			
	A	B	C	D
Deferred rotation	Would only maintain existing key species composition.	Same as Alternative A, except the composition of palatable woody vegetation would decrease.	Same as Alternative A.	Same as Alternative A.
Rest rotation	Would significantly improve the composition of key species. System has the advantage of grazing rotation and provides a yearlong rest which promotes seed production, root growth, plant vigor, and litter accumulation.	Would only improve or maintain the composition of key species.	Same as Alternative A.	Same as Alternative A.

With most of the area accessible to OHV use, the potential for water channeling, vegetation removal, weed dispersal, and soil disturbance would increase. A moderate increase in localized impacts would result within areas currently used for recreation.

Additional road construction and maintenance and right-of-way use, to support commodity-related activities, would minimally increase soil and vegetation impacts. Long-term impacts from roads and rights-of-way would be minimized with best management practices (BMP's). Short-term impacts would occur until disturbed surfaces are contoured and revegetated.

The identification of plant communities at risk by the Interior Columbia Basin Ecosystem Management Project (ICBEMP) as having cultural values has increased consultation with the Tribal people and awareness among resource specialists.

Alternative B

Upland native shrub steppe communities would be managed to attain a trend toward desired range of conditions based on site potential. Management actions would be for maintenance of the condition where vegetation composition and structure are consistent with desired conditions. Forage production and other commodity values of native and nonnative vegetation resources would be optimized.

The impacts from mineral exploration or development would be similar to those identified in Alternative A, except the acreage of high mineral potential land remaining available for exploration and development would be highest under this alternative.

Management of wildland fire and prescribed fire would have impacts similar to those identified in Alternative A; however, treatment configuration of prescribed burns would emphasize commodity production such as livestock forage as opposed to mosaics which benefit wildlife.

Impacts resulting from vegetation manipulation, primarily seedings, would be similar to those identified in Alternative A; however, more use of nonnative species might be employed. This might ensure seeding success but would maintain less diversity. Some stands of seeded nonnative perennial species would continue to be managed primarily for forage production, so connectivity of big sagebrush cover may be reduced.

Impacts for management of shrub species would be similar to those identified in Alternative A. Connectivity of big sagebrush cover would be maintained in native vegetation communities that provide important wildlife habitat.

Weed management would have impacts similar to those identified in Alternative A.

Management of special status plant, fish, and wildlife species would have impacts the same as identified in Alternative A.

Impacts from wild horse management would be as described in Alternative A, except impacts would increase due to potentially greater horse numbers in both Beaty Butte and Paisley Herd Management Areas.

Impacts from livestock management actions would be similar to those identified in Alternative A. As a result of optimizing livestock use of available forage, the benefits of returning vegetation material to the soil would be minimized. Long-term vigor and health of vegetation communities could be maintained across the landscape, except at localized areas of concentrated activity.

About 8 percent of the acreage in the resource area would show a short-term decrease in species composition as a result of spring/summer livestock grazing during the growing season. In the long term, impacts of spring/summer grazing would be reduced significantly when replaced by spring, deferred, deferred rotation or rest rotation grazing systems. In the long term, there would be less than 1 percent of the acres in resource area under spring/summer grazing under Alternative B.

The spring/fall and deferred grazing systems would result in a decrease in palatable woody vegetation such as willows, quaking aspen, and antelope bitterbrush. The rate of decline would be faster under this alternative than under Alternative A.

A summary of grazing impacts to key species vegetation by type of grazing system and season of use is shown in Table 4-1. Specific impacts of livestock grazing to the various plant communities by grazing system are fully discussed in Appendix E3

Impacts to vegetation and soil resources from new project construction would be similar to those identified in Alternative A, though more projects could be constructed.

Impacts from recreation use would be similar to those identified in Alternative A, except there would be more development of roads, trails, and campgrounds, and less emphasis on dispersed recreation. Recreation use would be more concentrated; therefore, the impacts of visitor use (such as vegetation trampling and removal) would be more concentrated.

Impacts from OHV use would be of the same types as identified in Alternative A, but 3,000 acres fewer would be open.

Alternative C

Under this management, the ecological condition of the shrub steppe could be improved with the emphasize on natural values associated with the diverse composition and structure of vegetation.

Areas that are burned by wildland fire would be rehabilitated or revegetated to protect soil, water, and vegetation resources, and to prevent introduction of noxious weeds and cheatgrass. Livestock use of burned areas would be deferred during the growing season for a minimum of 2 years following rehabilitation; and wildlife use might be deferred until shrubs are tall enough to survive browsing. This would allow the desired vegetation to become established and litter accumulation to have recovered to levels that are adequate to support and protect plant community functions.

Nonnative seedings would be allowed to change over time to native shrubs and grasses, and in some cases may actually be rehabilitated by prescribed fire or physical manipulation to entirely native seedings, especially where mosaic plant communities are desired. Large nonnative seedings could be broken up into mosaics of native vegetation using green stripping.

These actions would support the progress toward supporting greater species and/or structural diversity. Connectivity of big sagebrush cover would be encouraged especially in greater sage-grouse nesting areas.

Livestock forage production and range improvements would be reduced. Construction of fewer new rangeland projects would limit impacts to vegetation and soil resources and would allow for recovery of heavy use areas around watering holes and other water sources.

With the aid of rehabilitation, less livestock grazing, and use of prescribed fire, this alternative would generally reduce dominance by woody species, such as juniper and bitterbrush, and increase mosaics of diverse structures of multiple-aged shrubs, forbs, and perennial grasses. This would result in greater productivity and improved natural functions and watershed stability. Shrub reintroduction into burned sites would maintain diversity at a moderate scale, especially within habitat of significant sagebrush-dependent wildlife species.

Total protection from disturbance would be the easiest way to improve microbiotic soil crusts, but this is not

often possible or desirable. However, protection of relic sites as rangeland reference areas would provide important baseline comparisons for ecological potential and future scientific research. While biotic crusts have not been the main criteria for proposing ACEC's, the proposed areas would be less disturbed allowing for the crusts to recover naturally from damage caused by off-road vehicles and livestock grazing.

Proactive management is needed to prevent unnaturally large and/or frequent fires in areas where fuel buildup or exotic annual grass invasions have occurred. Such management actions may include altering grazing regimes to prevent annual plant invasions (such as spring rest rotation in seedings), prescribed fire to prevent fuel buildup (especially to reduce high woody vegetation densities), brush beating to release forbs and grasses and to reduce shrub densities, and/or restricting off-road vehicle use. The benefits from healthy micro-biotic crusts are nutrient inputs, better water infiltration and soil surface stability, and in some cases, healthy biocrusts prevent invasion of small-seeded invasive plant species (USDI-BLM and USGS 2001).

Watershed improvement for both function and processes would enhance soil conditions in most cases. Management activities and uses for water resources, as well as construction and maintenance of roads, would not have a negative effect on plant communities if they meet minimum construction standards. In some cases, actions such as checkdams to prevent overland flow would be beneficial to the shrub steppe.

The impacts from mineral exploration or development would be similar to those identified in Alternative A; however, this alternative is the most restrictive. The withdrawal of the proposed Red Knoll ACEC (11,588 acres) from public land and mining would be a positive influence on maintaining the naturalness of the sage-brush steppe and for the cultural use and values of the area.

The impacts of livestock management actions would be similar as identified in Alternative A. However, there would be 20 percent less AUM's, and no authorized temporary nonrenewable grazing use for the entire resource area. Appropriate grazing of available forage could retain adequate plant litter to maintain soil productivity and limit accelerated erosion, but with lower utilization levels, progress toward attaining desired range of conditions would be accelerated. Less fencing and water development would open new areas for grazing but would require more activity in moving the livestock away from existing water resources. The reduced livestock grazing would beneficially return plant litter to the soil. Long-term vigor and health of vegetation communities; which includes maintenance of soil stability and energy, nutrient, and water cycling; would be maintained across the landscape; except at small, localized areas of livestock concentrations. Much of the reduced grazing pressures would be within proposed ACEC's and would help protect and enhance the biodiversity of plant community "cells" for which the ACEC is being proposed.

The vegetation composition on areas under rest rotation grazing systems (56 percent of the area grazed) in the resource area would improve under this alternative.

The spring/fall and deferred grazing systems would result in a decrease in palatable woody vegetation such as willows, quaking aspen, and antelope bitterbrush. These grazing systems are found on about 4 percent of the acres that are grazed in the resource area. Decline would be slowest under this alternative. Also, there would be a decline in palatable woody species under winter and deferred rotation grazing that would not occur in the other alternatives.

About 6 percent of the acres in the resource area would have a decrease in species composition under the spring/summer grazing system. These impacts would be in the short term or as long as the spring/summer grazing systems are still in effect. The long term impacts of spring/summer grazing would be reduced significantly as this system would be replaced by spring, deferred, deferred rotation, or rest rotation grazing systems. In the long term, there would be less than 1 percent of the acres in resource area under spring/summer grazing in this alternative.

A summary of grazing impacts to key species vegetation by type of grazing system and season of use is shown in Table 4-1. Specific impacts of livestock grazing to the various plant communities by grazing system are fully discussed in Appendix E3

Wild horse impacts would be similar to those under Alternative B.

Under this alternative, recreation would emphasize dispersed camping and recreational use, and undeveloped types of recreation, thereby lessening of the magnitude of impacts. At the same time, dispersed recreation use is difficult to control. Support facilities and interpretation of natural and cultural values would help develop a conservation ethic for the recreational users. Rehabilitation or closure of sites where resource values are being jeopardized would help restore the community diversity and improve plant structure.

Impacts from OHV use would be the same types as identified in Alternative A, but cumulatively of much less magnitude because none of the Lakeview Resource Area (LRA) would have open designation. There would be a 79 percent increase for limited and closed designations. These reductions would allow more control over the use of OHV's in LRA and significantly lower the negative impacts of the vehicles. By restricting off-road vehicle use, microbiotic crusts have a chance to recover to ecological potential.

Rights-of-way and pipelines would have the least negative impact and disturbance of all the alternatives. Nominal corridor width would be half the size proposed in Alternative B, thus reducing the influence of disturbance and physical disruption of soil and plants associated with these actions. The few actions involving legal public or administrative access would be limited and generally of little impact; however, where new roads are constructed BMP's would be met.

This alternative proposes a significant increase of SMA's in the LRA: 12 new ACEC's, 1 existing ACEC add-on, and 3 WSR's. Both types of designation allow for special management to encourage the protection of natural resources, especially in research natural area (RNA)/ACEC's. This special management allows natural plant communities to be protected from other uses and allows those communities to reach their potential, especially those designated as "cells" representing plant communities in the State of Oregon by the ONHP—among these protective management ACEC cells are 12 examples of the sagebrush steppe. These designations would give priority management attention to the areas.

Alternative D

This alternative is a balance between Alternative A or B and Alternative C, so that under this management natural values would be protected and improved while providing commodity production. Many vegetation communities would progress toward a reduced dominance by woody species and an increased mosaic of multiple-aged shrubs, forbs, and perennial grasses (both native and introduced). Long-term vigor and health of the vegetation communities, which includes maintenance of soil stability and energy, nutrient, and water cycling, would be maintained across the landscape, except in localized areas of concentrated activity and in degraded communities of weeds/cheatgrass, or shrub-invaded crested wheatgrass seedings. Shrub reintroduction into rehabilitated burned sites would maintain diversity at most scales. All acreage seeded would receive native seed mixtures and in some areas, introduced adapted perennial grasses.

The impacts from mineral exploration or development would be similar to those identified in Alternative B, except the acreage of high mineral potential land remaining available for exploration and development would be less than Alternative A. In the Red Knoll ACEC, a smaller area than in Alternative C—4,600 instead of 11,588 acres—would be proposed for mineral withdrawal. In this alternative, only the lands with higher probability of mineral location would be withdrawn. Some of the Red Knoll ACEC would be open to mining effects. Locatable mining activities, leasable mineral activities, and mineral materials would have the same impacts as Alternative C . The Sunstone Area would be the same as Alternative A.

Impacts from vegetation manipulation, primarily seedings, would be similar to those identified in Alternative A. Use of a mixture of native and introduced species would maintain some diversity and some degree of seeding success. The chances of establishment of mixed seedings on marginal sites and during poor climatic conditions would be higher than using all native species—this alternative would support the opportunity to establish desirable perennial cover in sites currently dominated by sagebrush, annual species, and juniper. However, the goal would always be to eventually support biodiverse and sustainable plant communities.

Under this alternative, grazing AUM's of livestock forage would not change and temporary nonrenewable grazing use would be allowed. Administrative solutions (season of use and stocking levels, etc.) would attempt to maintain resource values for multiple use and sustainability. The impacts would be similar to Alternative A, since AUM's of use would remain at the same level. Disturbance associated with relatively high carrying capacities and long seasons of use for livestock would result in a landscape dominated by the low structural diversity characteristics of the earlier seral stage of rangeland vegetation. Maintaining the same level of grazing would lessen plant litter for incorporation into soils, biological crusts would be less than Alternative C, and soils would be less protected from erosive overland flow of precipitation. Annual grasses and forbs would dominate. Biological crusts would be heavily, negatively impacted because of hoof action, trailing, and other uses if livestock.

The vegetation composition on areas under rest rotation grazing systems (56 percent of the area grazed) in the resource area would improve under this alternative.

The spring/fall and deferred grazing systems would result in a decrease in palatable woody vegetation such as willows, quaking aspen, and antelope bitterbrush across all alternatives. These grazing systems are found on about 4 percent of the acres that are grazed in the resource area. Rate of decline would be the same as under Alternative A.

About 7 percent of the acres in the resource area would have a decrease in species composition under the spring/summer grazing system. These impacts would be in the short term or as long as the spring/summer grazing systems are still in effect. The long term impacts of spring/summer grazing would be reduced significantly as this system would be replaced by spring, deferred, deferred rotation, or rest rotation grazing systems. In the long term, there would be less than 1 percent of the acres in the resource area under spring/summer grazing in Alternative D.

A summary of grazing impacts to key species vegetation by type of grazing system and season of use is shown in Table 4-1. Specific impacts of livestock grazing to the various plant communities by grazing system are fully discussed in Appendix E3

Management of wildland fire and prescribed fire would have impacts similar to those identified in Alternative A.

Management of special status plant species would have the same impacts as identified in Alternative C especially with 12 ACEC's being proposed to help protect and enhance special status plant species. The ACEC's being proposed would help preserve plant communities designated by the ONHP group and protect plants and other resource values not being protected with special management in Alternative A.

Wild horse impacts would be similar to those discussed under Alternative B. Wild horse use of an area is much more widespread than livestock use; horses use hilltops, ridgelines, and other areas. They also concentrate around water holes or running water and have been known to dig up areas in canyon bottoms where water is running below the surface. Several factors play into the equation for wild horse management: the herd numbers allowed (which would not be decreased), forage AUM's allotted for the horses, and how frequently herds are gathered. In order to maintain the herd numbers, and because of length of time between gathers (5 years proposed), the AUM's need to be increased for horse use. Even though the livestock grazing AUM's are much less in this alternative, the decreases in livestock use are not in the herd areas. The results would be an increase of the horse impacts on sagebrush steppe plant communities in the Paisley Desert and Beaty Butte Herd Management Area. Although little or no research has been carried out on microbiotic crusts, hoof disturbances along regular trails and territories would be long lasting and lead to soil degradation, loss of crust cover, and loss of water infiltration.

Impacts form undeveloped recreational opportunities would be similar to those identified in Alternative C, but there would be less emphases on undeveloped, dispersed recreation. There would be more emphasis on establishing new recreation sites/areas and developing tourism opportunities; depending on where these activities take place would define the effects on the plant communities. Areas of OHV use designations of open would be smaller than Alternative A, limited and closed would be greater than Alternative A. This alternative allows for more concentration of recreational activities, therefore increasing the accumulated negative effects; but the increase of closed roads in this alternative would mitigate those effects in some areas, primarily ACEC's.

Impacts to vegetation and soil resources from new project construction would be similar to those identified in Alternative A. Roads causing resource damage or that are no longer needed would be closed and rehabilitated allowing the possibility of increased biodiversity and improvement of plant communities. It would also help to stem the introduction of invasive weeds and plants such as cheatgrass. Concerning the acquisition of legal public lands or administrative access, emphasis would be placed on providing access to areas containing high public resource values and increasing the possibility of increased disturbance in those areas.

This alternative would have the same impacts as Alternative B for rights-of-way analysis; and the exclusion areas and impacts are the same as Alternative C. The right-of-way corridor would be limited to 1,000 feet on each side of the centerline—twice as large as Alternative C—and would allow for weed infestation in the disturbed corridor section.

Alternative E

The entire planning area would be withdrawn and not available for mineral development; therefore, there would be no negative impacts. Lack of mining activity would have a positive effect on plant communities because of the lack of disturbances.

On average, the annual acreage burned by wildland fire would increase significantly due to greater fuel loads from lack of suppression and decreased grazing. The size and frequency of wildland fire in sites dominated by exotic annual species would increase. Increased fire frequency, especially in sites dominated by flammable annual species and along the tracks of frequent summer storm activity, would maintain communities currently vegetated by annual and shrub vegetation, with little opportunity for the establishment and increased dominance of perennials. Similarly, communities with perennials may degrade toward more annual species dominance. As annual species dominance increases, soil erosion accelerates, especially immediately following fire. Lack of rehabilitation to establish desirable vegetation components and to protect soil resources, would result in significant long-term impacts.

The condition of vegetation resources in areas not subject to frequent fire would improve as the impacts from livestock grazing are eliminated. However, without some prescribed fires or other rehabilitation actions, shrubs would tend to outcompete grass and perennial understory plants. Areas dominated by cheatgrass and other annuals would increase over desirable perennial plant cover. Depending on the soil type and other ecological conditions, conversion of shrub/annual grassland and annual grassland to perennial-dominated communities would occur very slowly. This change would probably be offset by conversion to annual species as a result of frequent wildland fires.

Monocultures of nonnative seeded species would not be managed to improve diversity. Some smaller stands may contain adequate native seed to develop the desirable mosaic of multiaged shrubs, forbs, and native grasses as a result of natural establishment. Many larger stands dominated by competitive nonnative species would allow little opportunity for establishment or increased dominance by native species.

In the absence of noxious weed control and management, weeds would continue to impact sagebrush steppe communities and soil stability. Though a number of actions that increase the risk of dominance by noxious weeds would be limited by actions of Alternative E, seed dispersal and soil disturbances favoring undesirable plants would continue. Native sagebrush steppe species do not compete well with many introduced noxious weeds, even when disturbances are removed and vectors of seed dispersal are reduced (Roche' and Burrill 1992; Butler 1993).

Impacts to vegetation and soil resources within, and eventually outside, of the herd management areas would increase as wild horse populations grow to exceed appropriate management levels. In the short term, surrounding areas, and eventually all areas occupied by horses, would be similarly impacted as numbers continue to increase. Wild horse numbers would cycle widely, with populations increasing during mild winters and moist summers, to large die-offs when winters are harsh or summer water becomes limited. Existing wild horse water developments would not be maintained, further limiting wild horse distribution from midsummer into the fall.

With the removal of livestock grazing, those impacts identified in Alternatives A–D would be eliminated. The condition of areas previously impacted would recover as allowed by competing exotic annual species and/or lack of soil. Utilization of forage resources by wildlife would continue. Deposition of plant litter and incorporation of organic matter into the soil would increase across the landscape, resulting in increased productivity, decreased erosion caused by overland flow of precipitation, and progress toward desired range of conditions. On sites dominated by native species, rates of water, nutrient, and energy cycling, and soil movement would be restored to near natural levels. Sites supporting shallow-rooted exotic annual species would continue to alter water, nutrient, and energy cycling, and accelerate rates of soil erosion.

Short-term impacts to vegetation and soil resources would occur as existing rangeland projects supporting livestock grazing are abandoned and structures are removed. In the long term, areas disturbed during project removal would revegetate naturally to resemble surrounding vegetation communities; however, areas around past waterholes would recover more slowly depending on extent of impacts.

Impacts to vegetation and soil resources from recreation activities would increase within areas of concentrated activity, including developed facilities. Human caused wildland fire may increase as recreational activity increases, resulting in impacts to soil and vegetation resources.

Limiting OHV use on all public land to existing roads and trails would limit direct and indirect impacts identified in Alternative A. Similarly, prohibition of additional road construction, as well as restriction of rights-of-way to existing corridors, would minimize or eliminate long-term impacts of surface disturbance. Limited maintenance of existing roads would increase impacts to soil and vegetative resources as a result of normal breakdown of roadbeds, wet weather rutting by vehicles, and channeling of runoff.

Exclusion of livestock from all public land would allow natural succession to improve the condition of many vegetation communities, even though the process would take longer than with active rehabilitation. Altered vegetation communities which have reached or passed a viable threshold and are dominated by annual species and/or noxious weeds would not improve. Fine fuels would increase with limited utilization of herbaceous growth resulting in increased occurrence and frequency of wildland fire. The condition of some vegetation communities currently dominated by a desirable mosaic of native species and with healthy understory of the forbs and perennials would be maintained in those areas not subject to frequent fire. Frequent wildland fire in healthy, native communities would cause a decline in vegetation diversity and health and allow for encroachment of weeds and annual species; this would lead to a decline in natural levels of nutrients, water, and energy cycling. Also, frequent wildland fires may accelerate soil erosion. Diversity and health of altered vegetation communities dominated by annual species would continue to decline with frequent fire.

Recreational and other nonconsumptive uses would impact soil and vegetation resources in localized areas of concentrated activity. Wild horse populations would be managed as under Alternative A and would have the the same impacts. Horses would be retained at appropriate management levels which could be adjusted. Lack of adequate measures to control the introduction and spread of noxious weeds would reduce the biodiversity and productivity of many shrub steppe communities.

Shrub steppe communities over the last 150 years have had impacts that are irreversable, such as grazing by sheep and livestock; introduction of cheatgrass and other nonnative aggressive weeds, suppression of wildland fires and range improvements that help determine where and when cattle graze in different areas. All of these actions have changed the landscape significantly from pre-European contact. None of the LRA is in precontact “pristine” condition nor would the BLM ever try to return the landscape to that state (even if it were possible). To abandon any management of the area as suggested by this alternative, would have for the most part a long-term negative impact on the shrub steppe plant communities.

Altered vegetation communities would not progress toward desired range of conditions. Natural processes of succession within communities dominated by annual and woody species would rarely progress toward desired range of conditions, even when actions impacting vegetative resources are reduced or eliminated. Additionally, impacts resulting from increased numbers and cyclic growth of wild horse populations, and failure to control the establishment and spread of noxious weeds, would not be consistent with meeting vegetation management objectives.

Summary of Impacts

Under Alternative A, sagebrush steppe would continue to improve in areas that are in late seral, although recovery rates and extent of recovery would be reduced in sagebrush areas without perennial understory and in seedings, especially where shrubs have begun to invade. Management would continue on a case-by-case, site-specific basis with less consideration for the ramifications of watershed analysis. Rangeland health standards would be analyzed for each allotment in the resource area. The major impacts to the sagebrush steppe are from wildland fires (short-term impact but possibility of annual exotic plant introduction), invasion of steppe by juniper (with loss of diversity, especially in the understory), weed invasion, and continued possible livestock misuse in seedings (such as repeated spring use every year). All of these actions would drive the threshold of site change away from rehabilitation and towards pure stands of cheatgrass and weeds (see Table 4-2. The management goal could not be achieved under this alternative.

Impacts under Alternative B would be similar to Alternative A; however, there would be an increased impact from livestock grazing for increased commodity yield. Improvements could occur, on a case-by-case basis, especially with more aggressive juniper management, but would have minimal desirable impact. While noxious weed management would emphasize protection of commodity resources, these actions would have an indirect effect on the desirable vegetative communities. The continued use of nonnative seedings would be counterproductive for biodiversity. The management goal for shrub steppe could not be achieved under this alternative because of emphasis on commodity production and public uses.

Impacts under Alternative C would be much less than under Alternatives A or B, especially with the decrease in livestock AUM's. Because of the wider watershed-scale management approach, recovery rates could be much faster, resulting in better conditions with greater biodiversity and desirable vegetative communities. Alternative C has the most aggressive prescribed burning and wildland fire use as well as most aggressive weed and juniper management strategies. With an aggressive emergency fire rehabilitation program, the

Table 4-2.—*Characteristics of vegetation communities meeting desired range of conditions---less desirable to more desirable*

Less desirable to more desirable
Noxious weeds/exotic annuals → desirable nonnative perennials → desirable native perennials/annuals
Limited vegetation structure → multi-structured vegetation → low native species diversity → high native species diversity
No occurrence of cryptobiotic crusts → high presence of cryptobiotic crusts
Disconnected habitats (strongholds disjunct) → connected habitats (strongholds linked) [1]
Diversity at the broad scale only → diversity at many scales

[1] These characteristics may be connected over time rather than space due to Great Basin biogeography and pluvial lakes/flooding.

long-term benefits from prescribed and wildland fire activities could be used to help restore degraded sagebrush steppe communities. This type of fire management along with greenstripping and other possible mechanical treatments for thinning of sagebrush, dense stagnant stands could be rehabilitated and desired range of condition standards met. With emphasis on protection and restoration of natural values, the management goal for shrub steppe could be achieved under this alternative, especially in late seral communities

Impacts under Alternative D would be similar to Alternative C; however, keeping the same livestock AUM's, management, and livestock grazing strategies could reduce recovery rates for late seral and other steppe communities. The increase of wild horse numbers and AUM's in the Paisley Herd Management Area could reduce the recovery rates in the wild horse areas, especially in the areas that are already in early seral stage, brush with introduced annuals, and seedings. The management goal for shrub steppe possibly could be achieved but at a much slower rate than Alternative C, but only with an aggressive program of greenstripping, active seed programs for rehabilitation, prescribed fires, and studies to understand more about sagebrush steppe.

The rest/rotation grazing system would be expected to most improve key species composition. As a result, the vegetation composition on over half the acres (56 percent) in the resource area would improve under all alternatives.

The spring/summer grazing system is the one grazing system that would result in a decrease in key species composition across all alternatives. The key herbaceous vegetation composition would either be improved or maintained under the other five grazing systems across all alternatives—this accounts for 36 percent of the acres under a grazing system in the resource area.

The number of acres with a decrease in species composition in the spring/summer grazing system would vary by alternative. These impacts would be in the short term or as long as the spring/summer grazing systems are still in effect. Under Alternatives B, C, and D, the long term impacts of spring/summer grazing would be reduced significantly as this system would be replaced by spring, deferred, deferred rotation, or rest rotation grazing systems. In the long term, there would be less than 1 percent of the acres in resource area under spring/summer grazing in Alternatives B, C, and D.

The spring/fall and deferred grazing systems would result in a decrease in palatable woody vegetation such as willows, quaking aspen, and antelope bitterbrush across all alternatives.

Under Alternative E, even with the elimination of grazing, impacts resulting from increased numbers and cyclic growth of wild horse populations and failure to control the establishment and spread of noxious weeds would have a negative effect on the steppe. Natural processes would be the primary determinants of ecosystem conditions and plant communities. However, allowing natural processes to dominate in heavily altered ecosystems would not restore natural plant communities, natural ecosystems, or natural fire regimes (assuming 'natural' means more typical of pre-Euro-American settlement conditions). Instead, entirely new ecosystems would develop. In areas dominated by nonnative annual and biennial plants, fire return intervals would decrease. In areas dominated by dense stands of woody species, fire return intervals and subsequent fire severity would increase. These new ecosystems would likely support a different suite of plant and animal species. Population levels of many current species, especially those with limited distribution or already in decline, would likely decrease and some may be extirpated. Natural processes of succession within communities dominated by annual and woody species would rarely progress toward desired range of conditions, even when actions are taken for

rehabilitation. The management goal for shrub steppe would not be achieved during the life of the plan if natural processes were left to determine the outcome of habitat conditions.

Secondary, Indirect, and Cumulative Impacts

In studying the cumulative effects of the dynamics of the sagebrush steppe over time, there have been major impacts that are in evidence today. Since introduction of cattle, sheep, and horses into the resource area 150 years ago, many changes have taken place; all compounded by fire and livestock grazing management. The most drastic effect on land management was the prevention of wildland fires and the accidental introduction of noxious weeds and nonnative annual grasses (such as cheatgrass). The altered understory and fire regime plus accelerated soil erosion has caused many sites to lose the potential for management back toward native perennial dominancy.

Eight major "states" and pathways of conditions have been considered by researchers (Figure 4-1). These "states" cross over the divisions of sagebrush species and subspecies as steppe was described earlier in document. None of the resource area is in pre-contact "pristine" condition nor would the BLM ever try to return the landscape to that state, even if it were possible. There is little representation of the late seral sagebrush steppe (State II) which is the relictual remains of pre-European steppe—possibly 1percent of total steppe in the resource area. Stagnant sagebrush (State III) which consists of shrubs with depauperate or bare understory make up 38 percent. Herb-dominated stands (State IV) and areas where perennial native grasses dominate do not occur except in patches in the resource area (less than 1 percent). All four of these "states" can be reversed and have good potential for rehabilitation management and actions. The total of acreage of these viable sagebrush steppe communities is around 40 percent.

The remaining 60 percent of the sagebrush steppe consists of "states" that have exceeded the threshold and subsequent management requires expensive, risky, and extensive solutions. The remaining states are: desertified sagebrush steppe, which constitutes brush with only introduced annuals in understory (State V—19 percent) , introduced wheatgrass and ryegrass pastures (State VI, such as crested wheatgrass plantings—15 percent), introduced grass pastures with shrub reinvasion (State VII—25 percent), and cheatgrass/ Medusahead (State VII—1 percent).

By identifying and quantifying the described conditions (states) of sagebrush steppe in the resource area, management can direct the use of allotments and rehabilitation possibilities. It is cheaper and more feasible to foster good stewardship of the land having late seral vegetation (manage while in States I, II, III, or IV) rather than rely on restoration efforts after degradation has taken place (States V, VI, VII, and VIII).

The above discussion is a method for determining past use and effects of management on the sagebrush steppe. The major secondary, indirect, or cumulatvie impacts to sagebrush steppe vegetation is loss of late seral communities, destruction of understory and perennial vegetation, loss of biodiversity, and conversion to marginal and degraded communties below the threshold of possible rehabilitation.

The impacts from activities implemented on adjacent private lands, U.S. Fish and Wildlife Service (USFWS)-, State-, and U.S. Forest Service (USFS)-administered lands would involve fire management and recreational use of areas. The closure of roads and OHV use areas would have a significant impact on sagebrush steppe communities. The loss of habitat due to noxious weed invasion could cause severe impacts to the sagebrush communities. Integrated weed management involving all landowners is important for protection against noxious weed invasion and establishment.

Riparian/Wetland Vegetation

Management Goal—*Restore, maintain, or improve riparian vegetation, habitat diversity, and associated watershed function to achieve healthy and productive riparian areas and wetlands.*

Analysis of Impacts

Alternative A

Actions that maintain/improve watershed conditions, improve ecological condition, improve vegetation cover and condition, manage nonnative seedings, and manage forest and woodland areas would have a positive impact in the long term on riparian/wetland areas by increasing vegetation cover on uplands and reducing erosion into riparian/wetland areas. Impacts would be minimal however, because improvement from these actions would be slow and incremental on a variety of sites scattered throughout the resource area.

Under current management, BMP's are developed and applied on a case-by-case basis. Because there are

currently no set BMP's, they cannot be analyzed here.

Existing grazing systems have led to improved riparian/wetland conditions and the option is available to further adjust systems and modify or construct exclosures to meet objectives (various grazing systems and their effects are described in Appendix E-2). However, objectives are defined primarily by proper functioning condition, and as discussed in Chapter 2, proper functioning condition is only a beginning point, with desired range of condition usually being a much more advance state. Hence, the level of improvement would be limited over setting objectives based on potential.

All wildland fires would have a negative short-term impact on wetland/riparian vegetation as ground cover is removed and woody species are burned. Short-term effects from wildland fire in riparian/wetlands that are in proper functioning condition would be less adverse, and functionally, these areas would respond more quickly to revegetation and rehabilitation efforts. In the long term, if the fire results in increased perennial ground cover and resprouting of woody species, it would have positive effects by improving watershed conditions. Sprouting species, some willows, and quaking aspen would respond more quickly after fire.

Fire control activities including line construction, aerial retardant application, and engine access can have negative impacts to riparian/wetland vegetation. These types of fire control activities cause ground disturbance that can result in increased sedimentation and nick-points in stream channels. Effects would need to be determined on a case-by-case basis and mitigated or eliminated where possible.

Rehabilitating burned areas to mitigate the adverse effects of wildland fire on soil and vegetation in a cost-effective manner and to minimize the possibility of wildland fire recurrence or invasion of weeds would have a positive effect on riparian/wetland vegetation and would be beneficial by reducing soil loss and sediment production. However, benefits may be limited since emergency fire rehabilitation activities are implemented on a case-by-case basis following wildland fire and a separate environmental assessment is completed for each emergency fire rehabilitation project.

Prescribed fire can be an effective tool for increasing ground cover and releasing quaking aspen stands from competition with invasive species, and would be beneficial to riparian/wetland vegetation. At the current level of prescribed fire activity (10,000–20,000 acres per year for the resource area) impacts to riparian/wetland vegetation are minimal and short-term. This level, however, may be inadequate to meet the upland vegetation requirements to return to a natural fire cycle. Some quaking aspen sites would continue to decline as juniper out competes quaking aspen for water, nutrients, and space. As with wildland fire, prescribed fire can have some short-term detrimental effects as ground cover is removed and erosion and sedimentation increase. These effects can be minimized by prescription design. As ground cover is increased and better soil holding vegetation is established, as with grasses instead of shrubs, riparian wetland sites would benefit in the long term.

Effects of energy and mineral exploration, location, development, and production would depend on the location and degree of disturbance. The effects would vary from none to small-scale effects away from riparian/wetland areas to major impacts if the exploration requires road development and disturbance in riparian/wetland sites. The effects would be similar for oil and gas leasing, geothermal energy, and mineral material sales. Effects would occur from ground disturbance that would increase erosion, remove riparian/wetland vegetation, and alter drainage patterns by site and road development. Release of contaminants by development of ore or materials used in extraction can impact vegetation. Water used in production can dewater streams or reduce stream flows.

Rights-of-way development in, across, or near riparian/wetland areas would have a negative impact on riparian function. Development could result in the loss or constriction of floodplains, disruption or restriction of channel form, and removal of vegetation. Surface and subsurface flows would be disrupted. Drainage patterns could be altered creating erosion and incision of channels. This type of impact can be observed on several area roads where channels have incised because floodplains have been narrowed by road construction. Most negative impacts to riparian/wetland vegetation would be long term. Rehabilitation following surface disturbance would focus on restoring wetlands to normal functioning.

Acquiring legal public access to riparian/wetland areas through conservation and scenic easements would ensure future access to these areas and allow management and monitoring of these sites, and should cause no effects to riparian/wetland vegetation. Public use over current levels is not expected over the life of the plan, so impacts should not increase.

Construction of new roads or maintenance of existing

roads in or through riparian or wetland areas would have a negative impact by reducing vegetation and increasing potential for soil erosion similar to rights-of-way development. Development could result in the loss or constriction of floodplains, disruption or constriction of channel form, and removal of vegetation. Surface and subsurface flows would be disrupted. This type of impact can be observed on several area roads where channels have incised because floodplains have been narrowed by road construction. The degree of impact would depend on the extent of the project within the riparian/wetland zone.

Managing for proper functioning condition only as a minimum goal may limit further improvement towards site potential in riparian/wetland areas. In other words, proper functioning condition is not the ultimate goal, but the first step in attaining desired range of condition. Focusing specifically on the riparian/wetland areas discounts effects at a watershed scale. Management to promote or maintain proper functioning condition on a minimum of 75 percent of the riparian/wetland areas could limit further improvements toward site potential.

Maintenance of current spring developments for livestock, wild horse, and wildlife water would have positive effects on offsite riparian/wetland vegetation by distributing use away from critical riparian/wetland areas. Water availability away from other wetland riparian sites distributes use to more locations. Maintenance of exclosure fences around spring developments and outflows prevents grazing and trampling of vegetation at the spring site. However, by not returning spring flows into their natural channels, loss of riparian/wetland vegetation extent would continue.

Continued adjustment of management on riparian/wetland areas designed to lessen impacts to these sites would be beneficial to riparian function, water quality, and fish and wildlife habitat. Improvements could be limited by the restricted goals and objectives permitted under the current plans.

On USFS lands in the upper elevation of watersheds, commercial and precommercial thinning, partial cut and sanitation, and salvage sales, and prescribed burning and wildland fire, could have negative impacts to the riparian/wetland systems downstream. Cumulatively, these effects could, without proper planning, implementation, and/or monitoring, result in decreased ground cover and canopy opening creating earlier runoff and higher peak flows. As discussed in Chapter 2, change in season of use and amount of peak flows impacts downstream channels and vegetation. Increased sedimentation could result as roads and culverts are placed. However, effects would need to be determined on a case-by-case basis and could be minimized by mitigation and avoidance. Improving forest health could also improve watershed conditions thus having a beneficial effect on riparian/wetland vegetation.

Juniper removal and prescribed burn projects could have positive impacts on riparian/wetland vegetation by improving ground cover (infiltration and soil moisture storage) and watershed conditions in the uplands. Increasing grass, forb, and (eventually) shrub cover is expected to improve infiltration rates and soil moisture storage.

Management of special status plant species would have a beneficial effect on riparian/wetland vegetation where the specific plant species depends on improved riparian/wetland vegetation. However, emphasizing management to the requirements of individual species could minimize overall watershed improvement by concentrating on local site improvement at the cost of wider, watershed-level improvement. Incorporation of special status plant species management into allotment monitoring and evaluation process would be beneficial where the plant habitat depends on improved riparian/wetland vegetation.

Control of weeds would improve or maintain watershed and riparian conditions which would result in a positive effect to riparian/wetland vegetation. By reducing competition for water and nutrients, ground cover would improve to species with better soil-holding capabilities. Native species protect banks and survive flood flows better than many introduced and noxious weeds. Continued public education would be necessary to reduce weed spread.

Managing for proper functioning condition riparian/wetland conditions that consider plant community structure, cover, forage, and other riparian habitat elements important to game and nongame wildlife species could have positive effects to riparian/wetland vegetation and associated riparian/wetland-dependant wildlife species. Deer fawning and riparian/wetland nesting habitat would improve.

Riparian/wetland area acquisition would increase public land acreage of these specialized and restricted habitats and would benefit riparian/wetland habitats and water quality as specific management is applied to improve these sites.

Limiting additional playa and lakebed developments would maintain the current proper functioning condi-

tion condition of affected lentic wetlands and would be a positive impact to wetland conditions. Lakebed development could change the water regimes onsite or allow water to be transported offsite, thus negatively affecting wetland vegetation. Lakebed pit construction can penetrate the restricting layer in the lake and result in the loss of the water-holding capability of the lake.

Implementation and maintenance of the Warner Wetlands and Abert Lake ACEC plans would maintain or enhance the current level of proper functioning condition in these two areas and would allow the few areas not currently in proper functioning condition to approach this condition.

Continuing the Cabin Lake Mule Deer Winter Range Cooperative Road Closure could have a positive effect on riparian/wetland vegetation by limiting off-road travel during a period when soils are saturated and potential for erosion is greatest. Managing motorized vehicles in accordance with existing open and limited designations would continue to cause negative effects on riparian/wetland vegetation on a site-specific basis since approximately 2.5 million acres of the resource area is designated as open to OHV's—this allows OHV's to drive cross-country off existing roads. Controlling public use has a positive effect on protecting the resource by limiting potential for channelization and vegetation removal by OHV's. Organized events are only authorized if there are no effects to the riparian/wetland resources.

Riparian/wetland vegetation maintenance and restoration is designed to improve fish and aquatic habitat; however, improvement limited only to proper functioning condition could prevent further improvement to site potential as described above.

Impact of grazing authorization and rangeland project implementation on riparian/wetland sites is site specific. Grazing management on many of these sites in the resource area has been adjusted to maintain or improve riparian sites by managing for vegetation and stream channel improvement. Other sites still need management adjustment. On some sites that are being grazed without regard to utilization, grazing is having an adverse impact to the riparian/wetland areas. Project work would only be completed with proper environmental analysis and mitigative measures to protect riparian/wetland function.

Authorization of temporary nonrenewable grazing use can preclude the accumulation of surplus plant matter for ground cover, litter development, and enhancement of watershed conditions, riparian/wetland vegetation, and ground nesting wildlife species.

Unauthorized grazing use in riparian or wetland pastures can have a negative impact on these resources. If unauthorized use is detected early, this action would have a minimal negative effect. If use occurs over a longer period it could have a negative effect as bank-holding or wetland vegetation is removed over authorized levels.

Wild horses use the herd management areas year-round and impact riparian/wetland sites negatively in some areas (especially the springs in the Beaty Butte area). These effects occur by uncontrolled removal of vegetation, and trampling. Confining horses to herd management areas reduces damage to sites outside these areas. Keeping horses inside the herd management areas benefits the riparian aquatic resources outside these areas. Effects on riparian/wetland vegetation due to water development project implementation would need to be determined on a case-by-case basis, but generally new developments near riparian/wetland areas would have a negative effect if horses had free access to remove protective vegetation. Fences and other management structures could have a beneficial effect by controlling use away from these areas.

Current management of Warner Wetlands Special Recreation Management Area and the remaining public land as an extensive recreation management area could cause negative impacts to riparian/wetland vegetation on some sites. Increased public use could have a negative effect as more people are attracted to the area and remove vegetation, alter drainage patterns, and compact riparian/wetland sites. Controlling public use could have a positive effect.

Managing public lands to primarily provide social and economic benefits to local residents, businesses, visitors, and future generations could have potential future impacts to riparian/wetland vegetation. Current recreation developments are minimal and have minimal impact to riparian/wetland vegetation. Protection of ACEC's with riparian/wetland habitat values would have beneficial impacts.

Alternative B

Actions to maintain/improve watershed conditions, improve ecological condition, improve vegetation cover and condition, manage nonnative seedings, and manage forest and woodland areas would have impacts similar to those under Alternative A. However, positive impacts would likely to be slower realized since

emphasis would be on the production and use of forage, as well as other commodity uses.

Implementation of BMP's would reduce or eliminate some of the effects described in Alternative A. For example, fire control BMP's to minimize heavy equipment for fire line construction would reduce impacts to the riparian corridor through vegetation removal. Refer to Apendix D for anticipated benefits of BMP implementation.

Wildland fire and rehabilitation impacts would be similar; however, short- and long-term prescribed fire impacts could increase with the three-fold increase of prescribed fire activity proposed.

The effects on riparian/wetland vegetation from energy and mineral exploration, location, and development would be similar, but would be greater under this alternative that emphasizes commodity production.

New road construction and maintenance of existing roads would have a greater potential for impacting watershed health under this alternative, and therefore have a negative impact on riparian/wetland vegetation by increasing high flows and contributing excess sediment, but the level of effect could be minimized by following road construction standards for riparian/wetlands.

Deferment of grazing for two growing seasons minimum after wildland fire or prescribed fire in upland areas would provide residual cover necessary for ground-nesting species and protect upland function.

Implementation of riparian/wetland restoration projects would benefit riparian/wetland vegetation. Maintenance of spring developments could have positive impact on riparian/wetland vegetation by distributing use away from critical riparian/wetland area thereby preventing grazing and trampling of vegetation.

Juniper management would have more positive effects on riparian/wetland vegetation than Alternative A, since up to 75 percent of early- to mid-successional stands of juniper would be treated. It is not known at this time what percent of this juniper management would have a direct impact to riparian wetland areas. However, projects associated with riparian/wetland areas would have a high priority to produce more improvement to the sites.

Direction to treat all quaking aspen stands within the life of the plan would greatly improve quaking aspen stand condition and maintain those stands that are currently functioning.

Allowing playa and lakebed developments could degrade the current proper functioning condition of wetlands and would have a negative impact to wetland conditions. These effects are described in Alternative A.

Managing upland habitats so that the forage, water, cover, plant community structure, and security necessary for wildlife are available on public land would not negatively effect riparian/wetland vegetation if wildlife and livestock use is concentrated away from these areas.

Managing motorized vehicles with emphasis on open OHV use designation and maximizing opportunities for organized OHV events could cause more negative impacts to riparian/wetland vegetation by directly damaging vegetation and increasing erosion potential.

Mitigative measures and BMP's on BLM-authorized projects would eliminate or reduce impacts to special status species utilizing riparian/wetland habitats.

Maximizing authorization of temporary nonrenewable grazing use and increasing livestock grazing use by 11,657 AUM's could further preclude the opportunities to enhance other resource values.

Wild horses management impacts could cumulatively impact riparian/wetland vegetation more if the increase of domestic livestock grazing use occurs in the same area as the wild horse use.

Optimizing the management of Warner Wetlands Special Recreation Management Area and expanding management of existing developed and undeveloped recreation sites could have greater impacts to riparian/wetland vegetation, as a result of increased visitor use of the area.

Impacts from social and economic uses could be intensified with emphasis on commodity production and public use.

Alternative C

Impacts to riparian/wetland vegetation from prescribed burn projects could have more impact since the acre limit for prescribed fires and wildland fire combined would increase from 20,000 to 640,000 acres per year. Riparian/wetland areas in proper functioning condition would respond quicker than those not functioning and

impacts would be short-term. These effects would be as described in Alternative A.

Implementation of BMP's would reduce or eliminate some of the effects described in Alternative A. For example, fire control BMP's to minimize heavy equipment for fire line construction would reduce impacts to the riparian corridor through vegetation removal. Refer to Apendix D for anticipated benefits of BMP implementation.

Grazing impacts would be less from those found in Alternatives A and B as long as minimum standards for ecosystem health are met and suspended nonuse is not authorized. Grazing use authorization would be reduced by 21,647 AUM's, emphasizing resource values, consistent with resource objectives.

Impacts from suppression of wildland fires would be greater under this alternative. With the increased limit of 640,000 acres burned annually and the possible designation of areas for wildland fire use, there is a potential for loss of more riparian/wetland vegetation depending on where the fires occur. Prescribed fires could be designed to mitigate or eliminate losses and nonfunctioning riparian/wetland areas could be identified prior to the designation of new wildland fire use areas. Most riparian/wetland habitat loss would occur naturally from wildland fire and would create a short-term impact. Emergency fire rehabilitation would continue to occur to meet resource objectives and rehabilitate areas not functioning at the time.

Effects of energy and mineral exploration, location, development, and production on riparian/wetland habitats could vary from minimal with small scale effects to major if the exploration requires road development and disturbance. Although all practical measures to maintain or restore riparian/wetland habitat are required of all mining operations, impacts to these resources would continue to occur in the form of localized surface disturbance over the short term. The effects would be similar for oil and gas leasing, geothermal energy, and solid mineral material sales. The effects on riparian/wetland habitat from the energy and mineral program would be assumed to be less under this alternative that emphasizes protection of natural values and closes certain areas to mineral entry or extraction than either Alternatives A or B.

Impacts from disposal of public land would be less than the other two alternatives since only 8,000 acres would be available for disposal as opposed to 42,500 acres in Alternative A, and 54,800 acres in Alternative B.

New road construction would have a lesser potential for impacting watershed health under this alternative, and therefore have minimal impacts on riparian/wetland habitat. The level of effect could be minimized by following BMP's and road construction and rehabilitation standards, and adherence to resource objectives.

Improving ecological conditions and restoration in the uplands after a prescribed or wildland fire would have the same beneficial impacts on riparian/wetland habitat by maximizing vegetative production and protecting upland function and contributing to the continued health of the watershed. Minimum standards for ecosystem health would be followed and seed mixes would be limited to native perennial species only.

Rehabilitation of spring developments would have positive effects on riparian/wetland vegetation by returning all flow to the original channel as long as livestock were excluded from these areas.

Exclusion of livestock in riparian/wetland habitats would have beneficial impacts to riparian/wetland vegetation.

The removal of all roads within riparian/wetland areas and other unneeded roads within the resource area would positively impact watershed conditions and eliminate the need to perform future maintenance.

Western juniper, old growth, and snag management; quaking aspen stand management; and bighorn sheep management would have the same effects on riparian/wetland vegetation as Alternative B.

Noxious weed management would have the greatest beneficial impacts to riparian/wetland habitats by eradication of a greater number of weeds within the resource area.

Eliminating new playa and lakebed developments and rehabilitating nonfunctioning sites would benefit riparian/wetland habitats and return the sites to proper functioning condition.

Managing upland habitats so that the forage, water, cover, structure, and security necessary for game and nongame wildlife species would positively benefit riparian/wetland vegetation.

Managing livestock forage production to support the increase of 8,390 additional wildlife AUM's identified by the Oregon Department of Fish and Wildlife (ODFW) would have a minimal impact on riparian/

wetland vegetation.

Reducing domestic livestock grazing authorization by 23,015 AUM's and eliminating livestock grazing in riparian conservation areas would eliminate or reduce impacts to riparian/wetland habitats associated with livestock use including, vegetation trampling and over-use, bank destabilization, and fouling the water. Eliminating authorization of temporary nonrenewable grazing use, and abandonment and rehabilitation of rangeland projects could also benefit special status species if adequate water is available for use.

Managing existing Warner Wetlands Special Recreation Management Area and emphasizing undeveloped, dispersed recreation opportunities in North Lake County Special Recreation Management Area would benefit riparian/wetland vegetation.

Managing motorized vehicles with emphasis on limited OHV use designation and authorizing organized OHV events to existing roads and trails would benefit riparian/wetland vegetation.

Alternative D

Impacts to riparian/wetland vegetation from prescribed burn projects could be greater since the acre limit for prescribed fires and wildland fires combined would increase from 20,000 to 640,000 acres per year. Riparian/wetland areas in proper functioning condition would respond quicker than those not functioning and impacts would be short term.

Implementation of BMP's would reduce or eliminate some of the effects described in Alternative A. For example, fire control BMP's to minimize heavy equipment for fire line construction would reduce impacts to the riparian corridor through vegetation removal. Refer to Apendix D for anticipated benefits of BMP implementation.

If standards and compliance with the conditions of the "Bald Eagle Management Area Cooperative Plan" with the Fremont National Forest are followed, effects to riparian/wetland vegetation from timber management would be minimal (the same as Alternative C).

Grazing impacts would be the same as Alternatives A as long as minimum standards for ecosystem health are met. Grazing use authorization would remain at 108,234 AUM's while emphasizing resource values, consistent with resource objectives. Temporary nonuse would only be authorized if conflicts with other uses would not occur.

Impacts from suppression of wildland fires would be the same as Alternative C.

The effects on riparian/wetland habitat from the energy and mineral program would be assumed to be the same under this alternative as Alternative C, although it closes certain areas to mineral entry or extraction.

New road construction would have a lesser potential for impacting watershed health under this alternative. The level of effect could be minimized by following road construction and rehabilitation standards and adherence to resource objectives and BMP's.

Improving ecological conditions and restoration in the uplands after a prescribed or wildland fire would have the same beneficial impacts on riparian/wetland habitat by maximizing vegetative production and would protect upland function and contribute to the continued health of the watershed. Minimum standards for ecosystem health would be followed and seed mixes would not be limited to native perennial species only.

Rehabilitation of spring developments would have the same effects on riparian/wetland vegetation as Alternative B.

Implementation of livestock grazing systems that promote the recovery or maintenance of riparian systems to desired range of conditions based on site potential in riparian/wetland habitats would have the same effects as Alternative B

The removal of any roads within riparian/wetland riparian conservation areas that are impacting the stream and/or riparian zone would have the same effects on watershed conditions as Alternative B, and would reduce the need to perform future maintenance.

Western juniper, old growth, and snag management; quaking aspen stand management; and bighorn sheep management would have the same impacts to riparian/wetland vegetation as Alternative B.

Quaking aspen stand management would have the same effects on riparian/wetland vegetation as Alternative B.

Noxious weed management would have the same effects on riparian/wetland habitats as under Alternatives A and B, with greater emphasis on restoration of infested areas.

Playa and lakebed management would have the same beneficial impacts on riparian/wetland habitats by returning the sites to proper functioning condition as

under Alternative C.

Managing upland habitats so that the forage, water, cover, structure, and security necessary for game and nongame wildlife species would have the same effects on riparian/wetland vegetation as under Alternative C.

Managing livestock forage production to support the increase of 8,390 additional wildlife AUM's identified by the ODFW would have a minimal impact on riparian/wetland vegetation.

Continuing the current domestic livestock grazing authorization resource-area wide and implementing domestic livestock grazing systems in riparian conservation areas that promote the recovery or maintenance of riparian systems to desired range of conditions based on site potential would have the same effect on riparian/wetland vegetation as Alternative A. The potential for authorization of suspended nonuse and temporary nonrenewable grazing use could cause impacts to riparian/wetland vegetation. The abandonment and rehabilitation of rangeland projects that do not contribute to meeting other management objectives could benefit riparian/wetland vegetation and allow for restoration of sites not functioning at this time.

Management of existing Warner Wetlands Special Recreation Management Area and North Lake County Special Recreation Management Area would have the same effects on riparian/wetland vegetation as Alternative B.

Managing motorized vehicles with emphasis on open OHV use designation and authorizing organized OHV events to existing roads and trails would have the same effects on riparian/wetland vegetation as Alternative C.

Alternative E

Prescribed burning would not be initiated under this alternative.

Since livestock grazing would be eliminated under this alternative, there would be no effects from grazing management.

Impacts from wildland fires would be the greatest under this alternative. The appropriate management response would emphasize initial attack, full suppression only to protect human life, and other Federal, state, or private property. Large tracts of crucial wildlife and special status species habitat could be burned and unuseable for the life of this plan. No emergency fire rehabilitation would be completed following a wildland fire. Riparian/wetland areas currently below proper functioning condition would not be restored after wildland fire under this alternative. Future conditions of riparian/wetland areas would allow natural processes to define vegetation composition across the landscape and no restoration would be conducted.

The effects on riparian/wetland habitat from the energy and minerals program would be least under this alternative with only authorizing energy and mineral actions required by law.

New road construction would have the least potential for impacting watershed health under this alternative. Only roads required by law would be constructed. The level of impacts could be minimized further by following road construction and rehabilitation standards and adherence to resource objectives and BMP's.

No maintenance or rehabilitation of spring developments would occur under this alternative and would negatively effect riparian/wetland vegetation within nonfunctioning sites.

Roads maintenance would not occur under this alternative. Those roads negatively affecting riparian/wetland areas would continue to cause impacts and other roads within riparian/wetland areas would have the potential for causing negative effects in the future without regular maintenance.

Natural processes would regulate western juniper, old growth, and snag management under this alternative. Juniper expansion would continue causing negative impacts to riparian/wetland vegetation.

Special status plant species would not be managed under this alternative except for federally listed species as specified in recovery plans. This action would have a minimal effect on riparian/wetland vegetation.

Noxious weed management would focus only on high priority areas to protect adjacent private property and would have negative impacts on riparian/wetland habitats currently infested or occupied in the future under this alternative.

Bighorn sheep would be allowed to disperse naturally and could cause negative effects on riparian/wetland vegetation if concentration occurs.

No riparian or wetland acquisition or disposal would occur under this alternative and would negatively effect

the potential for increase of riparian/wetlands in public ownership.

Restoration of playa and lakebed habitats would not occur under this alternative and would negatively effect currently nonfunctioning riparian/wetland areas and areas at risk in the future.

Full implementation and maintenance of the Warner Wetlands and Lake Abert ACEC plans would not occur under this alternative and would cause negative impacts to riparian/wetland vegetation from erosion and flooding.

There would be no management of upland habitats (rangeland improvements) to provide forage, water, cover, structure, and security necessary for game and nongame wildlife species which would cause negative effects on riparian/wetland vegetation due to concentrated wildlife use.

Maintenance and restoration would not occur in fish and aquatic habitat and would continue to cause negative impacts to riparian/wetland vegetation under this alternative.

BLM-authorized projects would be limited to those required by law and wild horse survival. BMP's would be implemented on any new projects.

The abandonment of all rangeland projects could negatively impact riparian/wetland vegetation by concentrating wildlife use.

Wild horses could cause negative impacts to riparian/wetland vegetation if horse numbers increase above appropriate management levels and concentration occurs.

Managing motorized vehicles with emphasis on limited and closed OHV use designation and not authorizing organized OHV events would have the same effects on riparian/wetland vegetation as Alternative C.

Social and economic uses would cause the least impact to riparian/wetland vegetation since no commodity production would be allowed from public land.

Summary of Impacts

Under Alternative A, riparian/wetland vegetation and associated wildlife habitats would continue to improve, although recovery rates and extent of recovery would be reduced to allow for commodity uses, including livestock, transportation, and recreation. Management would continue on a case-by-case basis on a site-specific level with less consideration for watershed scale effects. The major impacts to riparian/wetland vegetation are from wildland fire (short-term impact), and the lack of an aggressive juniper/quaking aspen, and weed management program (long-term impact). The management goal for riparian/wetland vegetation could be achieved under this alternative with the exception of quaking aspen management and the continuing encroachment of juniper into these stands. Without immediate treatment, some quaking aspen stands could be lost forever. Wetland areas could also be taken over with noxious weeds if more effective chemicals are not approved.

Impacts from Alternative B would be similar to Alternative A. Because of law and policy ("Endangered Species Act" and "Clean Water Act" [CWA], etc.) setting a high minimum standard, the difference in effects would be less than would occur otherwise. Generally, minimally acceptable conditions would be required and mitigation would occur on a case-by-case basis rather than on a watershed scale. While improvements would occur, they would take longer and not be as extensive as would occur under Alternative A. The management goal for riparian/wetland vegetation could be achieved under this alternative, although at a much slower rate due to the emphasis on commodity production and public uses. Noxious weed management would emphasize protection of commodity resources as opposed to watershed resources. Juniper and quaking aspen management would be more aggressive under this alternative than Alternative A and would have a beneficial impact to riparian/wetland vegetation.

Impacts from Alternative C would be much less than under Alternatives A or B. Recovery rates would be much faster resulting in better riparian/wetland vegetation conditions. Watershed-scale effects at the levels specified in Alternative C would result in more stable conditions. With emphasis on protection and restoration of natural values, the management goal for riparian/wetland vegetation could be achieved under this alternative. This alternative has the most aggressive weed, juniper, and quaking aspen management strategies of Alternatives A and B which would be implemented resource area wide. Alternative C also has the most aggressive prescribed burning and wildland fire use management program which could cause greater short-term impacts to riparian/wetland vegetation. With an aggressive emergency fire rehabilitation program, the long-term benefits from prescribed and wildland fire activities could be used to restore nonfunctioning riparian/wetland sites.

Impacts from Alternative D would be similar to Alternative C; however, recovery rates for riparian/wetland vegetation would require more time to achieve desired range of condition. Slower recovery rates would be caused by less stringent direction to restore watershed function and processes, so somewhat less improvement to riparian/wetland vegetation would occur. More consideration is given to watershed scale effects than under Alternatives A and B. The management goal for riparian/wetland vegetation could be achieved under this alternative.

Impacts from Alternative E would be similar to Alternative D; however, without active restoration, currently nonfunctioning riparian/wetland habitats may never reach their full potential. Watershed-scale effects would progress toward natural recovery of uplands but increased juniper encroachment would continue to degrade watershed level effects to riparian/wetland vegetation and quaking aspen stands. By allowing natural processes to determine the outcome of habitat conditions, the management goal for riparian/wetland vegetation may never be achieved on limited sites under this alternative.

Secondary, Indirect, and Cumulative Impacts

The major secondary, indirect, or cumulative impacts to riparian/wetland vegetation is habitat loss, destruction, conversion to less marginal habitat, and loss of habitat connectivity. This habitat loss can result from upstream impacts on other land owners property from stand conversion, channel alteration, water withdrawal, road construction, and other vegetation treatments. The impacts from activities implemented on adjacent and upstream USFS and private lands creates additional cumulative impacts to BLM authorized actions.

The cumulative effects of conversion of riparian/wetland habitat in combination with BLM's proposed alternatives could have major impacts on special status and other wildlife species dependent on these habitats. Private landowners have converted and drained some wetland habitats to create livestock forage and pasture. Channelization and irrigation water withdrawal on private lands has altered flood and late season flows, which has impacted lower stream and wetland function. Some private landowners have also implemented wetland restoration projects that restore riparian/wetland function. Activities involving prescribed burning would have to be coordinated with adjacent landowners to minimize cumulative, short-term impacts caused by the combined actions.

The loss of habitat due to noxious weed invasion could cause severe impacts to riparian/wetland vegetation and special status and other wildlife species using these habitats. Integrated weed management involving all private landowners is essential to protecting these habitats from noxious weed invasion and establishment.

Actions that have a cumulative effect on watershed function, especially in relation to the watersheds ability to capture, store, and slowly release water, would ultimately effect riparian and wetland vegetation. On most forested watersheds in the planning area, equivalent clear-cut acres from timber harvest and road construction, along with channel incision and channelization, has resulted in increase flood flows, increased frequency of floods, and flood that occur earlier in the season. The Deep Creek, Thomas Creek, and Chewaucan Watershed Assessments have demonstrated these changes to some degree in each watershed. The change to earlier, more frequent and intense flood flows has impacted channel form, and thereby fish and aquatic habitat. The cumulative effects that created our current conditions are now being reversed as forest health improvements are implemented. The cumulative effect of these projects would build over time to again return to better fish and aquatic habitat conditions.

It is anticipated that the USFS would continue to implement forest health projects that would stabilize watershed conditions. Private land trends are difficult to predict, but more programs are available that assist private land owners in implementation of on the ground watershed improvements. With increased scrutiny of private land management, some improvement in stream conditions and management is anticipated.

Forest and Woodlands

Management Goal 1—*In commercial (pine) forest stands, maintain or restore forest health and meet wildlife habitat needs.*

Assumptions

Due to scattered locations, small area size, harsh sites, and low volumes per acre, management of the commercial forest stands for programmed, sustained yield of commercial forest products is not economically feasible. Treatment of the scattered stands outside special areas is usually not feasible unless combined with similar land on adjacent ownerships, or as part of an area-wide landscape treatment. As a result, acres of

forest treatments and commercial production are not predictable, and are not shown below.

Analysis of Impacts

Alternatives A–D

Management of commercial forest lands within SMA's (such as ACEC/RNA's and WSA's, etc.) would be directed by specific plans to protect the special values of the area. Outside special areas, commercial forest stands would be treated on an "opportunity" basis, as described in the assumptions above. Wildland fires which threaten commercial stands would be fully suppressed in most areas. Table 4-3 shows a summary of impacts to commercial forest land by alternative.

Alternative E

No stand treatments would be done. Forest stands, as a result, are typically dense, overstocked, and stressed. As ladder fuels thicken, risk of catastrophic loss of entire forest stands from wildland fire increases with time. Risk of catastrophic loss from insects and disease also increases with time, as trees become more stressed and less resilient.

Summary of Impacts

Alternatives A–D would have similar impacts. Table 4-3 shows that the area of commercial forest within special areas is the same across these alternatives (8,739 acres, or 60 percent of the total commercial forest land). Management of these forest lands would be guided by, and would be subordinate to, management objectives of the special areas in which they are located. Treatment of the scattered stands outside special areas is usually feasible only when it can be combined with similar land on adjacent ownerships, or as part of an area-wide landscape treatment. Wildland fires which threaten commercial forest stands would be suppressed in most areas. Under Alternative E, no stand treatments to improve forest health would be done.

Secondary, Indirect, and Cumulative Impacts

The extent of forest health treatments on commercial forest lands, mainly by thinning and prescribed fire, is uncertain under Alternatives A–D. Since forest stands are all relatively small in size, any treatment will be dependent on landscape-scale applications, or feasibility to combine with adjacent ownerships, or the overall management objectives of special areas. Under Alternative E, it is certain that no stand treatments would be done. As understory densities thicken, trees will become more stressed and less resilient. Risk of catastrophic loss from insects and stand-replacing fires would increase with time, with little or no natural regeneration of trees due to destruction of the seed source.

Management Goal 2—*Restore productivity and biodiversity in western juniper woodlands and quaking aspen groves.*

Alternatives A–D

Outside historic (old growth) sites, western juniper woodlands would be managed for the enhancement of other resource values. In these areas, now dominated by invasive juniper (less than 130 years old), management would be driven by the goal of maintaining or restoring native grasses or shrubs after removal of the juniper overstory. The concept of a sustained yield of commercial forest products does not technically apply, since the species itself is classified as noncommercial. A programmed harvest of juniper products on a sustained-yield basis is not proposed for this plan. However, recovery or salvage of such products as firewood, posts, poles, sawlogs, boughs, and biomass would take place on many of the juniper stands which have been burned or cut for enhancement of the other resource values.

Management of juniper woodlands within SMA's would be determined by specific plans to protect the special values of the areas. Table 4-3 shows a summary of impacts to juniper woodlands by alternative. In treated areas, juniper dominance is generally limited to rocky outcrops, ridges, and other historic (old growth) sites where wildland fire frequency is limited by lower site productivity and sparse fuels. Western juniper occurs at low densities in association with vigorous shrubs, grasses, and forbs (where site potential permits). Historic western juniper sites retain old growth characteristics. Quaking aspen groves occupy historic range and are in stable or improving condition.

Alternative E

No juniper or quaking aspen restoration treatments would be done. Western juniper continues to dominate invaded sites, as well as historic juniper sites. Western juniper expansion continues. Juniper woodlands continue to increase in density, as well as area. Historic western juniper sites continue to experience an increase in younger trees, with increased mortality of individual old growth juniper on the driest sites.

Table 4-3.—*Lakeview Resource Area forest area within and outside special areas by alternative* [1]

	Alternative				
	A	B	C	D	E
Commercial forests [2]					
Total forest area	14,455	14,455	14,455	14,455	14,455
Within special areas	8,739	8,739	8,779	8,739	0
Outside special areas	5,716	5,716	5,676	5,716	14,455
Juniper woodland					
Total forest area	215,052	215,052	215,052	215,052	215,052
Within special areas	34,887	36,845	61,117	60,424	0
Outside special areas	180,165	178,207	153,935	154,628	215,052
Quaking aspen [3]					
Total forest area	2,063	2,063	2,063	2,063	2,063
Within special areas	87	87	87	87	0
Outside special areas	1,976	1,976	1,976	1,976	2,063

[1] Special areas include WSA's, ACEC's, RNA's, and WSR's.
[2] Commercial forests include ponderosa pine and other forest types from the Oregon GAP dataset.
[3] Since quaking aspen stands are typically smaller than the minimum mapping unit size used in the GAP analysis, these acre values are assumed to be underestimated.

Quaking aspen stands continue to decline and die out.

Summary of Impacts

Table 4-3 shows the area of juniper woodlands within special areas, ranging from 16 percent in Alternative A to 17 percent in Alternative B; 28 percent in Alternatives C and D, and 0 percent in Alternative E. Management of these juniper woodlands would be determined by the objectives of the special areas. Alternative A would maintain the present management practice of meeting public demand for cutting juniper products, while reserving snags and old growth trees on treatment areas. By maximizing harvest of juniper, and treating up to 75 percent of early to mid-successional juniper woodlands by fire, Alternative B would treat the largest area of juniper and provide the greatest release of native grass and brush. Alternatives C and D would treat somewhat fewer acres, while Alternative E would involve no management treatments at all. Alternative A provided no guidelines for quaking aspen management, while Alternatives B, C, and D prescribed treatment of all quaking aspen stands being invaded by western juniper. Alternative E provided no treatment of quaking aspen stands.

Secondary, Indirect, and Cumulative Impacts

Historic (old growth) juniper sites would be managed to enhance old growth trees (by thinning or fire) under all alternatives except Alternative E. These old growth stands would improve in vigor by removing competitive smaller, invasive trees. In areas dominated by invasive juniper (less than 130-years old), the greatest improvement through release of native grasses and brush would occur under Alternative B. Alternatives C and D would treat fewer acres, but still improve species composition on a large area. Alternative E would result in continued juniper expansion and increased density in existing invaded areas. Alternative A did not specifically address management of quaking aspen groves, but Alternatives B, C, and D would improve condition of aspen groves by treating all groves being invaded by western juniper, which, in effect, is nearly all aspen stands. Alternative E would involve no treatment and allow juniper to take over these stands, with subsequent decline and termination of the quaking aspen groves.

Special Status Plants

Management Goal—*Manage public lands to maintain, restore, or enhance populations and habitats of special status plant species. Priority for the application of management actions would be: (1) Federal endangered or threatened (T&E) species, (2) Federal proposed species, (3) Federal candidate species, (4) State listed species, (5) BLM sensitive species, (6) BLM assessment species, and (7) BLM tracking species. Protect, restore, and enhance the variety of plant species and communities in abundance and distributions that provide for their continued existence and normal functioning.*

Analysis of Impacts

Alternative A

The present management is driven by the requirements of the individual plant species and would emphasize maintenance rather than restoration and enhancement. Conservation agreements would be written and implemented with the USFWS for selected species at highest risk. This would leave some of the other special status species at risk and little interest in the habitat requirements.

Locatable mining activities, leasable mineral activities, and mineral materials activities have the potential to impact special status plants and their habitats. The extent of impacts would be determined primarily by the amount of activity, location, and mining techniques. Leasable mineral activities are subject to stipulations which would generally result in minimal direct impacts to special status plants. Habitat fragmentation may cause certain long-term indirect negative impacts as gene flows may be disrupted where sites become unavailable for colonization and exotics and noxious weeds are introduced to disturbed sites. Mineral materials activities would have no impact on special status plants because the location of mineral materials sites would be placed well out of known occurrences or habitats of species since field surveys would be conducted prior to project approval.

Fire management would have a variety of impacts on special status plants. Wildland and prescribed fires have a positive impact on some of the species—and for many of the species there is not enough biomass or fine fuels to carry a fire in the plant community. However, fire suppression activities such as line construction would avoid plant sites as much as possible, and to that end, maps have been prepared with plant locations for resource fire advisers to help avoid sites.

Seeding or planting of native or exotic plant species to provide additional forage for wildlife or domestic livestock, or to stabilize disturbed areas, could alter habitat or affect populations of special status plant species. These actions could increase competition for occupation of a site and alter nutrient cycling regimes by the extensive use of nitrogen fixing species, such as legumes, in the plantings or seedings.

Exotic plant invasions into areas where rangeland health has decined and where surface-disturbing projects are developed would have a major indirect adverse impact on special status plant populations. The exotics would compete directly for resources and would prevent special status plants from fully occupying their historic ranges. This would be especially true for medusa head in buckwheat sites, one of the few noxious weeds that invades these barren ash-soiled sites.

The continuation of current livestock grazing practices including seasons of use, stocking levels, and turn-out locations could have an adverse long-term impact on some special status plant species. Exclosure fences have been constructed at three sites to evaluate the effect of grazing pressures on special status species prostrate buckwheat, Columbia cress, and Bogg's Lake hedge-hyssop. Repeated studies at these sites for the past 7 years have demonstrated that all three plant species had been negatively impacted by livestock grazing. The prevalence of introduced plants that now compete with native species (especially cheatgrass), grazing on the plants, and the direct trampling impact of livestock, suggest that overall impacts on special status species are and would continue to be generally adverse. Direct impacts to certain species which are known to be palatable to livestock would continue to be adverse unless sites are fenced or grazing impacts are otherwise mitigated, such as season of use.

An increase in recreation use within areas of high special status plant concentrations would result in adverse impacts. This could occur through trampling and subsequent weed introductions where sites are disturbed. A potential increase in OHV activities may result in long-term adverse impacts on special status plant species that occur particularly on the volcanic ash and sandy soils. Impacts would be both direct and indirect, including destruction of habitat, destruction of plants, and weed introductions, resulting in habitat modification and increased competition for resources. Overall, recreation use is anticipated to be adverse under this alternative.

Management of special status plant species/communities and cultural plant species/communities has improved vegetation community diversity. Use of heavy equipment in ACEC's, WSA's, and RNA's would be avoided and require line officer approval. Use of retardant would not be limited within these areas for initial attack. Use of retardant during extended attack would be considered as part of the wildland fire situation analysis, considering the resource values at risk. However, maps of SMA's, sensitive plant species, and cultural plant concerns would be available for analysis during wildland fires. As a result of these precautions, impacts to special status plants or communities from fire suppression would be minimal. Management for some special status species and cultural plants that are not fire tolerant (unknown for some of the species in the LRA) might constrain the use of prescribed fire Creation of exclosures around parts of the special status plant species areas have produced a baseline of foraging use (domestic and wild animals) and effects compared to nonforaging areas and protected habitat. This data helps with management of the plant species and has added to the general biodiversity of the communities.

Adjustments in land tenure would generally be beneficial, as BLM policy emphasizes retention of public land with high resource values and would not permit exchange or sale of public land occupied by special status species unless land of equal or a higher biological value is to be acquired. Prior to approval and issuance of any rights-of-way, lease, or permit, site examinations for special status plants would be conducted; therefore, generally no adverse impact would occur. However, because land use authorizations could result in substantial surface disturbance, special status plants could be indirectly impacted by fragmentation of habitat and introduction of exotic plants into nearby disturbed areas.

Alternative B

As in Alternative A, locatable mining activities, leasable mineral activities, and mineral materials activities have the potential to impact special status plants and their habitats. Three additions to mining are proposed under this alternative that could have a limited effect on the plant species. In the Devils Garden, if not designated wilderness, all lava resources would be available for commercial collection through the proper process; however, no special status plants are known to exist in the area but one rare *Mimulus* species may grow there. Inventories would have to be carried out before development of mining. Under this alternative, Lake Abert would be open to mining salts in the lake. This does not threaten any plant species, but extraction, development of processes, and other disturbances related to obtaining the salts could have an adverse impact of special status plants.

Fire management would be the same as Alternative A, as would the seeding or planting of native or exotic plant species to provide additional forage for wildlife or domestic livestock or to stabilize disturbed areas.

Vegetative treatments, including juniper control, prescribed burning, and seedings, could impact special status species, depending on the species, the number of exotic species within the area, overall ecological condition, and the likelihood that exotics would colonize the sites following treatment. Site examinations, to the extent feasible, would be conducted prior to treatments; however, due to the generally large size of such treatments, species may be overlooked and adverse impacts may result if species are uprooted during the the physical procedures.

Increased livestock use would have a short-term impact to special status plant species particularly through trampling in concentrated use areas, defoliation of the palatable species, and potential introduction of weed seeds into new sites. Exclosure fences for protection would be constructed to protect plant sites; some individual sites could be lost because of the lag time between establishing and confirming monitoring results and construction of protective exclosures. Long-term impacts would be slight to moderate to species as a whole; direct long-term negative impacts to certain species which are known to be palatable to livestock would continue at most sites except those areas fenced to exclude livestock.

Depending on the number of projects proposed, construction of new projects could result in long-term indirect adverse impacts on some species if the projects result in moving livestock into areas that were previously little used. In some cases, special status plants could benefit by improved dispersion of livestock. This action may result in numerous indirect impacts to species, particularly through introduction of weed seeds and potential reduction in seral stages at localized sites.

An increase in recreation uses in areas of high plant concentrations would result in adverse impacts to special status plant species. This could occur through trampling and subsequent weed introductions where sites are disturbed. Overall, recreation use is anticipated to be slight to moderately adverse under this

alternative depending on concentrations of the recreational use. OVH activities would have the same types of impacts as in Alternative A.

Adjustments in land tenure and rights-of-way leases or permits would be the same as Alternative A.

Alternative C

The alternative is similar to Alternative B, except it would manage for desired range of conditions by using a mix of restoration and enhancement measures for special status plant species and to use protection measures only where there are no opportunities for restoration. It would emphasize land management that fosters overall community health, habitat integrity, and landscape-level issue resolution, as well as meeting the requirements of individual species and their habitats. As in Alternatives A and B, conservation agreements would be developed to protect and monitor special status plant species and habitats.

In this alternative, 12 new ACEC areas (129,122 acres) would be created and four existing ACEC's would be retained. Ten of these ACEC's and one retained ACEC (Lost Forest—9,047 acres) would meet ONHP cell needs as RNA/ACEC's. Nine of these ACEC's (57,063 acres) have special status species growing within them. The added protection of WSA exists for 115,652 acres. There also would be more emphasis to conduct and record systematic inventories of populations and distributions of special status plant species where baseline information does not currently exist.

Locatable mining activities, leasable mineral activities, and mineral materials would have the same impacts as Alternative B, except that this alternative is more restrictive and calls for mineral withdrawal from part of the Red Knoll ACEC area. The effects would be that there would be less possibility of disturbance by actual mineral extraction and roads or other supporting activities.

Fire management impacts would be the same as Alternative B, with special status plant species considered in all suppression actions. Prescribed fire is recommended at Cave Springs (which is now fully protected by fencing from grazing) as a method of clearing vegetation which is competing with the reestablishment of desert allocarya. Several other methods of reestablishment have been attempted of this extirpated species and all have failed.

Vegetation treatment impacts would be the same as Alternative B. However, there would be fewer treatments and less acreage would be treated and impacted.

Livestock grazing in this alternative would lower AUM's by 20 percent and no temporary nonrenewable grazing use would be authorized in the resource area, thus lessening the adverse effects on the plants. This would be especially true in areas where livestock grazing has been documented to have a direct effect on specific special status plants. Studies have shown, using existing exclosure fences around part of the communities, that special status species plants are being threatened by grazing of wildlife, livestock, and wild horses. Fencing would protect populations of Bogg's Lake hedge-nettle, prostrate buckwheat, Cusick's buckwheat, snowline cymopterus, and Columbia cress.

Observation and monitoring have demonstrated that the wild horses prefer areas that are open and similar to the ash-flow, open soils areas of sensitive plant species. The horses tend to destructively congregate in these areas and mark them with their dung piles. In the Beaty Butte Herd Management Area, horse trails cross several sensitive plant species areas.

The 41 percent expansion of wild horse AUM's in the Paisley and 25 percent increase of horses in the Beaty Butte area would have a direct negative effect on special status plants, especially Crosby's buckwheat near Fish Fin in Beaty Butte, and possibly Cusick's buckwheat and snowline cymopteris in the Black Hills. Horses range and graze much differently than livestock; the ashy hills where the buckwheats grow are regular areas visited by wild horses. Their hoof action and creation of trails kill the plants that are barely surviving in these hostile habitats.

With the OHV designation reductions, benefits to be derived would include elimination of OHV disturbance for specific, vulnerable special status plants and their populations. The likelihood that OHV activity would bring weed seed into species habitat would be reduced; however, weed establishment may still occur through other means. In addition, limitations in all ACEC/RNA's to designated road and trails would provide protection to plant sites from direct use. Benefits would occur to sites currently identified as especially vulnerable to OHV activity and emergency closure procedures would remain in effect and also would be used as new conflicts would be identified. OHV activity in parts of the volcanic ash and sand complexes, where limitations would not be imposed, would result in certain plants being vulnerable to direct and indirect impacts in the short term.

In all the ACEC's containing sensitive plant species, careful consideration would be given to authorization of activities that could have a potentially negative effect on the plants or habitats. What may be good for other resources (such as project developments), could have a negative impact on the plants and habitats significant ACEC values. WSR designation of Guano Creek would limit activities in the area of Crosby's buckwheat and grimy ivesia; and it would limit mining activity and other potentially surface-disturbing activities. Creating ACEC's with special management would have beneficial effects for both plants and their habitats within the ACEC boundaries.

Issuance of any rights-of-way, leases, or permits would be the same as Alternative A.

Adjustments in land tenure would be advantageous to special status plants. This alternative places emphasis on acquiring land of high habitat quality and containing other significant biological resources, including special status species. An opportunity to acquire a private section of Mud Creek (20 acres) through the cooperation of The Nature Conservancy, would protect Oregon semaphore grass (*Pleuropogon oregonus*), the only Federal candidate for listing in Lake County. There is also an opportunity to reintroduce this species in other locations on Mud Creek from grass stock grown at Oregon State University.

Alternative D

This alternative is similar to Alternative C, except that protection of habitats or populations would have equal management weight with restoration and enhancement. As in other alternatives, conservation agreements would be developed to plan for the protection of special status plant species and habitats. Conservation strategies would then be written and plans developed to help insure the continuance of these species.

In this alternative, 12 new ACEC areas would be proposed and one ACEC area would be retained especially to meet ONHP cell needs of plant communities. Eight of these ACEC's have special status plant species as part of the proposed reason to create the ACEC. Systematic inventories of populations and distributions of special status plant species would be conducted as in Alternative C. Special status species management objectives would be incorporated into allotment monitoring and evaluation processes as in all other alternatives.

Locatable mining activites, leasable mineral activities, and mineral materials would have the same impacts as Alternative C, except that there would be less area proposed for withdrawal in the Red Butte ACEC. The effects would be a sight increase in disturbance by actual mineral extraction, roads, and other supporting activities. Fire management impacts would be the same as Alternative C, with special status plant species considered in all suppression actions. The prescribed fire to help with reintroduction of desert allocarya at Cave Springs would be proposed.

Vegetation treatment impacts would be the same as Alternative B; however, there would be fewer treatments and less acres treated or impacted.

Livestock grazing as proposed in this alternative would be the same as Alternative A, that means that current livestock grazing practices including seasons of use, stocking levels, and turnout locations would have an adverse long-term impact on some special status plant species. Even though administrative solutions would be emphasized for rangeland projects, fencing would be required in several areas to protect special status plant species and ONHP cells from grazing of wildlife, wild horses, and livestock.

The 41 percent expansion of wildhorse AUM's in the Paisley area and the 25 percent increase of horse AUM's in Beaty Butte area coupled with actual increase of horses (possible 40 more horses per area) would have a direct negative effect on special status plant species. The Black Hills and Fish Fin Rim are especially vulnerable.

OHV designations for this alternative for open are less than Alternative A; for limited are substantially less than Alternatives A or B but more than Alternative C; and for closed are slightly more than Alternative A. These designations, coupled with increase in recreation use within areas of high special status plant concentrations, would result in adverse impacts. Recreation use is anticipated to have a moderately adverse effect on the special status plants and communities.

WSR designation of Guano Creek would benefit the special status plant species Crosby's buckwheat and grimy ivesia. In all ACEC's, careful consideration would be given to authorization of activities such as project development that would directly affect special status plant species. These actions combined with the conservation agreements would provide protection for the habitat and actual individual plant species being protected.

Issuance of any rights-of-way, leases, or permits would

be the same as Alternative A.

Adjustments in land tenure would be advantageous to special status plants and would be the same as proposed in Alternative C.

The overall impact of Alternative D on special status plants is projected to be slightly more positive than Alternative A. However, this alternative has several threats to these plants and their communities—the amount of open OHV activities throughout most of the LRA, the same livestock grazing goals, increased wildhorse use, and simple ignorance of the special status plants remain. Plants and activities potentially affecting them would need to be monitored. The new ACEC designations and expanded existing ACEC's would create beneficial impacts as would restoration plans for impacted habitats, because numerous plant populations would be given priority management protection within adequate boundaries for species and habitat representation within a full range of variation.

Alternative E

If prescribed fire is not allowed, many plant communities that are on the threshold of becoming decadent or "desertified" would be lost to rehabilitation and would eventually become cheatgrass/meduashead communities or would be overloaded with shrubs at the expense of the grass/perennial understory. This action would have a direct effect on special status plants, many of which are already in soils and locations where the plant community is marginal for survival. Fire suppression to protect life and property may result in certain sites burning repeatedly within a short time. This may have an adverse effect on plant communities in an early-seral stage and would adversely affect some special status species. However, a beneficial impact may be that no direct physical damage would occur to plant sites as a result of fire suppression activities.

Absence of livestock grazing would have a beneficial impact on special status plants currently grazed or trampled by livestock. In addition, livestock as a vector in moving noxious weeds into new areas would be eliminated. With no project development or mining, natural processes would benefit special status plant species the most of all resources.

Lack of recreation management and uncontrolled recreation activities would result in detrimental effects, such as trampling, harvesting damage, and weed introductions to special status species and their habitats. These effects would occur in areas where recreational activities such as hiking and camping are likely to increase.

With all crosscountry OHV use eliminated, plant sites would receive full protection from short-term trampling and long-term trails caused by OHV activity. The removal of OHV vehicles in the Sand Dunes would be a positive effect—increasing the possibility that native plants, even special status species, would return to previously OHV disturbed areas.

Lack of aggressive weed control would have the potential to result in severe long-term adverse impacts to numerous species, particularly those along roads and trails where vehicle use may import weeds. Noxious weeds would spread into plant sites, physically displacing populations and preventing normal reproductive processes and water competition on ash soil sites.

The overall impact of Alternative E on special status plants is projected to be negative. Lack of aggressive and extensive noxious weed control and lack of wildland fire suppression would be critical factors in displacement of plants at certain sites. In habitats where wild horse herds would run, where perennial species would be vulnerable to repeated wildland fire, and where noxious weeds would overtake special status plant sites, special status plant species may decline or remain at low levels. This situation could contribute to the Federal listing of some plant species. The objectives for special status plants would likely not be met for the species found in horse herd areas, areas of repeated wildland fires, and where noxious weeds would not be controlled.

Summary of Impacts

Under Alternative A, special status plant species and their habitat could continue to improve, although recovery rates and extent of recovery would vary and could be reduced to allow for commodity uses. Generally, mitigation would occur on a case-by-case basis rather than on a watershed or larger scale. While improvements would occur, they would take longer. The major impacts to special status plant species are from wildland fire (short-term impacts and in some cases, depending on plant species, beneficial), the weed management program (long-term impact), grazing impacts from wild horses and livestock, recreation (especially OHV impacts), and possibly change in the carbon dioxide levels in the atmosphere (out of BLM control). The management goals for special status plant species and their habitats could be achieved under this alternative with added protection by fencing. Identified

management in Alternative A would have an overall beneficial impact and would facilitate meeting the objectives for most special status plants and their habitats.

Under Alternative B, in habitats that would be heavily impacted, special status plant species may decline or remain at low levels, potentially contributing to the Federal listing of some plant species. Species would be protected individually with little regard for overall habitat health. The objective for special status plants may not be met for species found in heavily impacted areas and where general ecological health is critical to species survival. Overall, while this alternative would provide for maintenance of special status plant species, there is a risk that some species and sites may receive significant adverse impacts, and require fencing or other mitigation to meet the objectives.

The overall impact of Alternative C on special status plants is projected to be positive. Major contributors which constitute a threat would include OHV activities at the most critical plant sites vulnerable to such activity, management of livestock grazing, and project development placement. All can be mitigated by early planning of activities. Beneficial impacts would be obtained with retention and establishment of ACEC's, because numerous plant populations would be given priority management protection within adequate boundaries for species and habitat representation within a full range of variation. The emphasis on restoration or enhancement would have more importance than protection and maintenance measures. Identified management in Alternative C would have an overall beneficial impact and would facilitate meeting the objectives for most special status plants and their habitats.

Impacts from Alternative D would be similar to Alternative C, especially with the establishment of new ACEC's; however, recovery rates for special status plant species habitat would require more time to improve.

The emphasis would be a balance of protection of habitats and populations with equal weight on restoration and enhancement.

Impacts from Alternative E would be similar to Alternative D; however, without disturbance from permitted activities and active restoration. There would be no restoration or enhancement and no protective fences. Although there would be no livestock grazing, there would be wildlife and wildhorse negative impacts. During the life of this plan, the management goal for special status plant species and their associated habitats may never be achieved under this alternative because of allowing natural processes to determine the outcome of habitat conditions

Secondary, Indirect, and Cumulative Impacts

The major secondary, indirect, or cumulative impacts to special status plant species is habitat loss, destruction of the plants, conversion to less marginal habitats (threatening viability of populations), and lost of habitat connectivity and variability.

The impacts from activities implemented on the adjacent Federal and public lands creates additional cumulative impacts on BLM lands. Oregon Department of Transportation (ODOT) coordinates with the BLM for spraying of noxious weeds so special status species in vulnerable areas may be protected. The USFS and USFWS contact the BLM for possible joint impacts such as fence building, road maintenance, and other actions on their respective administered lands. The ONHP is the data steward for the State and the BLM special status plant species; however, they are not involved in management of those species on Federal lands.

Feral horses in the Beaty Butte area constitute a threat to special status plant species as they move from refuge land in Oregon and Nevada, and State land in Oregon. The BLM manages the herds on BLM land and coordinate with the other agencies, but the cumulative effects are still there.

In the writing of conservation agreements, the BLM takes into account the entire range and distribution of special status plant species. The cumulative effects of “threats” on the entire range of these species is important in creating conservation strategies. An example is grimy ivesia: there are only a 31 plants in the LRA; however, on the Sheldon National Refuge in Nevada there are a relatively large number of them. By analyzing all populations and their ecology, conservation strategies could be proposed.

One impact that is considered a threat in analyzing special status plants is the gradual warming of the atmosphere and increase of carbon dioxide; this combination could have a long-term impact on sensitive plant species that are finely adapted to their environment. The BLM can not change these impacts but would consider them in viewing all impacts on special status plant species.

Noxious Weeds and Competing Undesirable Vegetation

Management Goal—*Control the introduction and proliferation of noxious weeds and competing undesirable plant species and reduce the extent and density of established populations to acceptable limits.*

Analysis of Impacts

Alternative A

Projects or activities designed to maintain or improve watershed function, rangeland health, and wildlife habitat would involve ongoing efforts to control weeds to protect/restore plant diversity. Improvements in ecological function would have a positive impact on the weed program, and weeds would be less likely to invade, although there would be some risk of plant establishment. Improvement in riparian areas (and other areas) could allow native species to better compete with introduced weeds which could result in fewer weeds in those sites. Maintaining and restoring habitat in good condition could reduce the risk of weed invasion. Ultimately, improved range condition could result in a decreased likelihood of weed establishment and increased resiliency to weed invasion. Conversely, any resource activity or management action which results in ground disturbance could increase the risk of weed invasion and establishment. Construction and maintenance projects, use of heavy equipment, livestock grazing, fire suppression, recreation activities, and mineral material disposal could all contribute to the spread of existing weeds and the introduction of new species from outside the resource area. People, vehicles, equipment, livestock, and wildlife coming from outside the LRA could bring weeds with them and could spread existing infestations. Weeds could be introduced through contaminated seed, mulch, and forage.

Risk of weed introduction and establishment could be mitigated by cleaning equipment prior to any maintenance or construction activity and before leaving the job site if the site is already infested, to prevent seed and plant part movement to other areas. The potential impacts resulting from livestock grazing could be mitigated by not allowing livestock in weed-infested areas during a time when propagules can be transported elsewhere. Livestock arriving from outside the resource area could be held in feedlots to allow weed seed to pass through the digestive system and fall off the coat. Requiring certified weed-free seed, mulch, and forage could reduce the risk of weed introduction to new areas.

Prescribed fire could have a beneficial impact when used as a weed control method and as a tool to stimulate reestablisment of native plants as part of an integrated weed management prescription to achieve resource objectives. However, some weed species are stimulated by fire and are better able to take advantage of the disturbance than more desirable plants. Fire management activities including fire suppression could introduce weeds as resources arrive from areas outside the LRA. Existing weeds could be spread to other areas. Emergency fire rehabilitation activities would reduce the risk of weed invasion by reestablishing vegetation on burned sites; however, these activities could potentially introduce or spread weeds through equipment and vehicle use or contaminated seed. Mitigation measures would be implemented to reduce this possibility.

Deferring grazing following fire could reduce the risk of weed invasion by eliminating a possible vector and the likelihood of increased disturbance, allowing desirable vegetation to become established. Reducing stocking levels, maintaining nonnative seedings in a vigorously productive state, and rehabilitating projects that do not meet management objectives could decrease the risk of weed invasion and establishment. However, livestock water developments would encourage concentrated use around waterholes which would likely result in bare ground, providing a site for weed establishment. Once established, the weeds could be easily spread by animals to uninfested areas. Temporary nonrenewable grazing use in weed-infested areas could increase the risk of weed spread. The potential impacts resulting from the authorization of temporary nonrenewable grazing use could be mitigated by not allowing temporary nonrenewable grazing use in weed-infested areas during a time when propagules can be transported elsewhere by livestock or vehicles. The low priority for restoration of poor condition rangelands in the Paisley Desert Herd Management Area would contribute to deteriorated range condition and could increase the risk of weed invasion and establishment.

Motorized vehicles could introduce weeds from elsewhere and/or spread existing weeds along ways and trails. Driving crosscountry could open up undisturbed areas to weeds spread by vehicles and could establish a conduit for weed movement. However, the increasing demand for recreation could present an increased opportunity to provide weed education materials. Restricting some recreation uses/access could reduce the risk of introduction and spread of weeds. Allowing

organized OHV events would provide an opportunity to educate large groups about weeds. Closing roads decreases the risk of weeds being introduced and spread by vehicles.

Corridors and rights-of-way tend to be hot spots for weeds—corridors are conduits for weed spread and establishment. Acquiring access through weed-infested properties is possible. Mitigation measures could include locating access routes to avoid weed infested areas, and cooperation with willing landowners to control infestations as access is acquired.

Ten-mile maintenance buffers between domestic sheep and goats and bighorns would preclude the use of sheep or goats as weed control agents within the buffer areas. Weed infested areas where sheep and goats would be effective in controlling weeds are currently within this 10-mile buffer. Potential for disease transmission exists for bighorns which stray outside of their approved areas if domestic sheep and goats are being used for weed control. A prohibition on the disturbance of raptor nest/roost sites may preclude weed treatment activities within a certain distance from a nest/roost, and at certain times of the year.

Weed control in WSA's, ACEC's, and WSR's would be carried out according to special areas guidance to protect or enhance resource values. All Visual Resource Management (VRM) Class I areas would require diligent ongoing inventory and control of weeds. Large weed patches seen from a distance could detract from the visual resource value. Weeds found on acquired lands which are adjacent to or within existing WSA's that meet wilderness criteria would be aggressively controlled.

Awarding local contracts for projects could reduce the risk of introduction and spread of new weeds from outside the LRA.

Alternative B

The "Abert Rim Weed Management Area Plan" would be expanded to provide guidance for the proposed Greater Abert Weed Management Area. The Greater Abert Weed Management Area would include all lands within the Abert Basin Watershed. The plan would be modeled after the "Warner Basin Weed Management Area Plan." The Abert Basin includes lands of several jurisdictions. Noxious weeds and undesirable plants are invading the basin, just as they are invading other parts of the resource area. The development of a cooperative weed management strategy for the basin would benefit all lands in the basin. Presently, the weed infestations are still reasonably manageable. If a cooperative effort to control weeds basin-wide is not adopted, the weed problem would get much worse. Losses to wildlife habitat, water quality, forage production, silviculture, agricultural production, and recreation values would diminish.

Projects or activities which maintain or improve watershed function, rangeland health, and wildlife habitat, as well as activities or management actions which result in ground disturbance, would have the same impact that is described under Alternative A. The emphasis on increased commodity production under this alternative would provide greater opportunities for weed introduction, spread, and establishment. As such, the weed program would become more aggressive with increased efforts in prevention education, early detection, and control.

Projects and activities such as installing corridor fencing on all streams, opening areas to mineral leasing, restoration projects to optimize forage, juniper harvest, increased prescribed fire activity, increasing AUM's for livestock and wildlife, and commercial use in the Sunstone Collection Area would cause more disturbance to soil and vegetation and increase potential for weed invasion. Upgrading VRM classes in WSR's and ACEC's would have the same impact as described under Alternative A. People, vehicles, equipment, livestock, and wildlife coming from outside the LRA would have the same impact as in Alternative A.

Reduced numbers of horses could allow for increases in productivity and recovery of herd management areas. The improved condition of these areas could decrease the risk of weed invasion and establishment.

Alternative C

Impacts of developing and implementing the "Greater Abert Weed Management Area Plan" would be the same as described under Alternative B.

Projects or activities which maintain or improve watershed function, rangeland health, and wildlife habitat, as well as activities or management actions which result in ground disturbance, would have the same impact that is described under Alternative A. The emphasis on protection of natural values under this alternative would dictate that the weed program be most aggressive. The zero-tolerance approach would result in more eradication of weeds at existing sites and the reestablishment of native species.

The projects and activities proposed under this alternative, such as fewer range improvements, less emphasis on providing livestock forage, rehabilitation projects using native perennials only, excluding livestock from streams, springs, and riparian and wetland areas, no temporary nonrenewable grazing use, removal of roads in riparian areas, increased mineral entry closures, and restricting OHV use to existing roads and trails across the resource area would have a positive impact on the weed program in that these actions would result in a decreased likelihood that weeds would be introduced and existing infestations would be less likely to spread.

Actions pertaining to prescribed fire would have the same impact as in Alternative A, as would the implementation of wildland fire use. Actions pertaining to wild horses would have the same impact as in Alternative B.

Alternative D

Impacts of developing and implementing the "Greater Abert Weed Management Area Plan" would be the same as described under Alternative B.

Projects or activities which maintain or improve watershed function, rangeland health, and wildlife habitat, as well as activities or management actions which result in ground disturbance, would have the same impact that is described under Alternative A. Since this alternative strives to strike a balance between protecting and improving natural values while providing commodity production, the weed program would be expanded from present management. Inventory, control, and restoration efforts would increase. Education and outreach efforts would be expanded to include areas outside of Lake County in an attempt to "head-off" species that may spread into the LRA.

Activities proposed under this alternative such as limiting OHV use to designated roads and trails in some WSA's and to existing roads and trails in North Lake wildlife area, except for SMA's, removal of livestock from streams which are functioning at risk or nonfunctioning, and withdrawal of a portion of the proposed Red Knoll ACEC from public land and mining laws would have a positive impact on the weed program in that these actions would result in a decreased likelihood that weeds would be introduced and existing infestations would be less likely to spread.

Increasing AUM's for wild horses and increasing the appropriate management level in the Paisley Desert Herd Management Area would cause more disturbance to soil and vegetation and increase the potential for weed invasion and establishment.

Actions pertaining to prescribed fire would have the same impact as in Alternative A, as would the implementation of wildland fire use.

Alternative E

Since under this alternative uses would be limited, commodity production excluded, and natural processes maximized, the impacts to the weed program would be both positive and negative. Only high priority noxious weed species and infested areas on BLM would be treated to protect adjacent private property. Projects or activities which maintain or improve watershed function, rangeland health, and wildlife habitat, as well as activities or management actions which result in ground disturbance, would have the same impact that is described under Alternative A. Maintaining roads for administrative access, maintaining existing water developments crucial to wildlife and wild horses, and removing riparian exclosures could result in ground disturbance which would increase the risk of weed introduction and establishment.

The exclusion of commodity production activities would generally benefit the weed program in that there would be fewer opportunities for ground disturbance and transport of plant parts by people and equipment associated with the commodity.

The lack of active fire rehabilitation following wildland fire could have detrimental effects if the fire passes through a weed infested area. Many weed species are encouraged by fire and could dominate the site following fire if no rehabilitation is implemented.

Impacts from wild horses would be the same as described in Alternative D.

Summary of Impacts

Under all alternatives the introduction and spread of weeds would continue. Any resource activity or management action which results in ground disturbance could increase the risk of weed invasion and establishment. The degree to which the introduction and spread of weeds can be controlled changes by alternative. In Alternative A weeds would continue to invade from areas outside the LRA, though the size and number of existing infestations could decrease with continued treatments. In Alternative B there is an increased risk of weed introduction and establishment because of increases in commodity production that would introduce equipment and people to the LRA bringing weeds

from elsewhere or spread existing infestations. In Alternative C the short-term risk of weed introduction and establishment is high as restoration projects are implemented which disturb the ground surface. In the long term, the risk of weed invasion would decrease as improvements in ecological function are realized. Under Alternative D the risk of weed introduction and establishment may decrease as inventory, control, and education efforts are expanded. The impact in Alternative E is mixed. The exclusion of permitted uses and commodity production may provide less opportunity for weed introduction and establishment. However, the lack of restoration and fire rehabilitation may lead to an increase in weed spread.

Secondary, Indirect, and Cumulative Impacts

At the present time, the Fremont National Forest, with the exception of the Silver Lake Ranger District, does not have a comprehensive, ongoing weed management program. As a result, the forest would continue to be a source of weed infestation since the headwaters of many of the streams on the planning area are on the forest. Weed seeds would continue to travel downstream onto BLM-administered lands. The Silver Lake Ranger District has a weed management program which would help to minimize weed infestation from forest sources in the northern part of the planning area.

If the injunction against the use of certain herbicides is lifted in the future, it would facilitate the control and eradication of weeds on BLM-administered lands. However, it is likely that regardless of the methods used to control weeds, their introduction and spread would continue for the foreseeable future.

Soils

Management Goal—*Manage soil on public lands to maintain, restore, or enhance soil erosion class and watershed improvement and protect areas of fragile soil using best management practices (BMP's).*

Analysis of Impacts

Alternative A

BMP's (see Appendix D) are implemented on a case-by-case basis and are not always applied. As a result, impacts to soils can occur from the construction or maintenance of roads, range improvements, and other surface-disturbing projects. Impacts are usually soil compaction from vehicle or livestock or wild horse use and loss of soil offsite by wind and water erosion.

Soils would be impacted by mining activity such as the Tucker Hill Perlite Mine and the Oil-Dri diatomaceous earth mining operation in Christmas Valley. Soils could be removed offsite or lost to erosion. To minimize this impact and to aid in reclamation of mined sites, soil would be stockpiled onsite and seeded as needed to stablize soil movement and retain organic matter.

Leaving 79 percent of the planning area open to OHV use could have an impact on soils. Vehicles would be able to drive off existing roads and ways which would result in soil compaction, thereby slowing or preventing water infiltration and causing erosion.

Current road density in the various watersheds in the planning area is very low to moderate (ranging from 0.02 to 1.7 miles of road per square mile of land) as described by the ICBEMP scientific findings. This road density is not a significant impact on soils except in localized areas where roads pass through fragile soils.

Domestic livestock and wild horses have negative impacts to soils by increased compaction at waterholes and along trails. Overuse of vegetation can degrade soil conditions. Areas with poor soil conditions would remain in poor condition. Vegetation and soils currently in poor condition in the Paisley Desert and Sheeprock areas would remain a low priority for improvement and would possibly get worse.

Burned areas would be rehabilitated on a case-by-case basis. This would eventually provide vegetative cover and reduce soil erosion from burned areas.

Alternative B

Implementing BMP's (Appendix D) on all projects that could potentially affect soils would reduce impacts to soils. Additional road construction and maintenance and rights-of-way use, to support commodity-related activities, would minimally increase soil and vegetation impacts.

Mining activity would impact soils similar to that under Alternative A. Any stockpiled soil for reclamation would be seeded to provide a vegetation cover to reduce offsite soil loss from the stockpiles due to wind and water erosion during the life of the mining operation.

Leaving 79 percent of the planning area open to OHV

use would have a negative impact on soils. Vehicles would be able to drive off existing roads and ways which would result in soil compaction, reduce water infiltration, and cause subsequent erosion. Soil compaction and erosion would occur in areas of high concentration of recreation users such as developed or semideveloped sites or campgrounds. Increased livestock use would increase soil compaction, especially around watering and salting areas, and reduce vegetation cover and litter. These actions would increase soil erosion potential.

Restoration of areas in poor condition such as Paisley Desert and Sheeprock would be a high priority under this alternative. Such restoration would improve soil conditions.

Road closures would be few under this alternative—but any closures would help to reduce soil compaction and potential erosion.

Alternative C

Improvements to soil condition would be greatest under this alternative. Use of BMP's would be required on all potential soil-disturbing projects. This would reduce loss of soil during construction as well as reducing soil loss from erosion after the project is finished. Fewer projects would be completed under this alternative. Mineral exploration and development activity would be least and most restricted under this alternative; therefore, impacts to soils from mineral activity would be minimal.

All OHV use would be limited to existing or designated roads and trails or ways. Off-road driving of any kind would not be allowed. This would prevent development of new trails, soil compaction, and new erosion sources.

Areas that are burned by wildland fire would be rehabilitated or revegetated to protect soil, water, and vegetation resources, and to prevent introduction of noxious weeds and cheatgrass. Livestock use of burned areas would be deferred during the growing season for a minimum of 2 years following rehabilitation, thereby allowing vegetation to become better established and the soil to be stabilized.

Watershed improvement for both function and processes would enhance soil conditions in most cases. Appropriate grazing of available forage could retain adequate plant litter to maintain soil productivity and limit erosion, and with lower utilization levels, progress toward attaining desired range of conditions would be accelerated.

Restoration of areas in poor condition such as the Paisley Desert and Sheeprock areas would be a high priority under this alternative. Such restoration would improve soil conditions.

The greatest amount of existing roads would most likely be closed under this alternative. This would reduce soil compaction and erosion potential, especially on a watershed basis.

Alternative D

Improvements to soil condition would be greater under this alternative than Alternatives A or B, but less than Alternative C. Use of BMP's would be required on all potential soil-disturbing projects. This would reduce loss of soil during construction as well as reducing soil loss from erosion after the project is finished.

Mining activity would impact soils similar to that under Alternative B, but activity would be less under this alternative. On any mineral exploration or excavation activity, topsoil would be stockpiled and used for reclamation. Stockpiled soil would be seeded to reduce loss to wind or water erosion.

Restoration of areas in poor condition such as the Paisley Desert and Sheeprock areas would be a high priority under this alternative. Such restoration would improve soil conditions.

Impacts to soils from OHV use could be significant under this alternative. Approximately 64 percent of the planning area would be open to crosscountry travel by OHV which would result in increased soil compaction and increased erosion potential.

Any road closures would help to decrease soil compaction and erosion, especially on a watershed basis.

Alternative E

BMP's would be implemented for all soil-disturbing projects initiated under this alternative. However, very few new projects would be done.

With the removal of livestock grazing, the condition of areas previously impacted would recover as allowed by competing exotic annual species and/or lack of soil. Deposition of plant litter and incorporation of organic matter into the soil would increase across the land-

scape, resulting in increased productivity, decreased erosion caused by overland flow of precipitation, and progress toward desired range of conditions. On sites dominated by native species, rates of water, nutrient, and energy cycling, and soil movement would be restored to near historic levels. Sites supporting shallow-rooted exotic annual species would continue to alter water, nutrient, and energy cycling, and accelerate soil erosion.

Short-term impacts to soil resources would occur as existing rangeland projects supporting livestock grazing are abandoned and structures are removed. In the long term, areas disturbed during project removal would revegetate naturally to resemble surrounding vegetation communities; however, areas around past water holes would recover more slowly depending on extent of impacts.

Impacts to vegetation and soil resources from recreation activities would increase within areas of concentrated activity, including developed facilities. Human caused wildland fire may increase as recreational activity increases, resulting in impacts to soil and vegetation resources.

Wild horses would have negative impacts to soils by increased compaction at waterholes and along trails. Areas with poor soil conditions would remain in poor condition. Vegetation and soils currently in poor condition in the Paisley Desert and Sheeprock areas would remain a low priority for improvement and would possibly get worse.

All OHV use would be limited to existing roads and trails or ways. Off-road driving of any kind would not be allowed. This would prevent development of new trails, soil compaction, and new erosion sources.

Limited maintenance of existing roads would increase impacts to soil and vegetative resources as a result of normal breakdown of roadbeds, wet-weather rutting by vehicles, and channeling of runoff.

Summary of Impacts

BMP's to protect and manage soil would be implemented for all ground-disturbing activities, such as all new projects, livestock fences, grazing management projects, road maintenance, and pipelines maintenance. BMP's are described in Appendix D.

The soil management objective would be met under all the alternatives; however, Alternative C would provide the greatest amount of protection to soils followed by Alternative D.

The greatest potential impacts to soils would be from OHV use in open areas, mineral development, and new road construction. The likelihood of new mineral development is low under all alternatives. Very little, if any, new road construction is expected, since there has been virtually none in the past 20 years.

Indirect, Secondary, and Cumulative Impacts

Watersheds, including the soil component, on the public land have improved since the late 1800s. With the implementation of BMP's as standard operation procedures under all alternatives, this improvement would continue. However, there are some upland vegetation and soils conditions that cannot recover without active restoration. Such restoration projects are provided for in several other resources across the various alternatives.

Soil, vegetation, and watershed conditions are intricately tied together. While improving one component can help to improve the others, the greatest benefit comes from the synergistic effect of improving all components. It is the intent of this plan that the synergistic effect would be carried through the life of the plan and beyond.

Water Resources/Watershed Health

Management Goal 1—*Protect or restore watershed function and processes which determine the appropriate rates of precipitation capture, storage and release.*

Management Goal 2—*Ensure that surface water and groundwater influenced by Bureau of Land Management (BLM) activities comply with or are making significant progress toward achieving State of Oregon water quality standards for beneficial uses as established by the Oregon Department of Environmental Quality (ODEQ).*

Assumptions Common to Alternatives

- Water quality management plans or total maximum daily loads would improve watershed heath.
- The "Clean Water Act" (CWA) would be implemented through the use of BMP's and the development of water quality resource plans.

- Management activities that improve vegetation in uplands and riparian areas are assumed to decrease flood magnitude and frequency and to improve late season flows.

- Native plant communities capture, store, use, and release water in a processes which decreases erosion.

- The amount of compaction in a watershed can be estimated by the miles of roads.

Analysis of Impacts

Direct impacts: Indicators of change for direct impacts to watershed health in this analysis are (1) percent of the watershed in potential natural plant communities, and (2) amount of compacted land surface. Upland plant communities are currently being inventoried to describe what is there and what condition it is in—this is called ecological site inventory. An estimate can be made of plant communities and their condition but the data would be updated with the ecological site inventory information in the future. The amount of compacted area in the watershed would be estimated by the miles of roads. If a watershed has many roads it would also have barrow pits, trails, recreation sites, and other compacted areas in proportion to the amount of roads. Road density would be used as a surrogate for amount of compaction.

Risk analysis: The data necessary to analyze the indicators of change for direct impacts is currently being collected and can not always be estimated for Alternatives B through E. This effects analysis would look at risk of proposed management based on total number of acres managed, ability of management to change the vegetation community, and ability of management to increase compaction of bare soil. While some management actions can have a wide range of effects, more acres affected or more intense management would increase the risk of changing the vegetation community, increasing compaction and increasing the amount of bare soil. An example would be OHV use. The risk to watershed function increases with the amount of acres open to use—not all use causes a decrease to watershed function, but the risk is there.

Effects common to all alternatives: All alternatives would implement the CWA by restoring and maintaining the physical, biological, and chemical integrity of the water in the LRA. This includes meeting Oregon State water quality standards and implementing BMP's. This would provide the baseline resource protection and would protect watershed health. Over time, the condition of watersheds would improve with implementation of the CWA.

There are 261,566 acres ungrazed within the LRA. This management allows for natural capture, storage, and release of precipitation. There are large areas with little or no recreation, roads, mining, and vegetation management (timber harvest or management). These areas are naturally processing precipitation with little change in infiltration or water storage capacity.

Alternative A

The shrub steppe management goals and actions focus on maintaining current conditions and use. Restoration is on a case-by-case basis. This would not move the upland watershed vegetation communities towards potential natural condition. This has a risk of changing the rate and ability of the watershed to capture (infiltration rate), store (soil pore space), and release (plant use or water subsurface movement). Implementation of this alternative would maintain the upland watershed condition, but currently there are areas in poor condition in the Sheep Rock area and Paisley Desert.

The riparian and wetland vegetation management goals and actions focus on achieving proper functioning condition on 75 percent of the area. Restoration is on a case-by-case basis. Proper functioning condition is the first step towards achieving the desired range of conditions. It would not achieve the potential natural condition or desired conditions. Maintenance of existing and construction of new spring developments increase the risk to watershed function by increasing water consumption and compaction by domestic livestock, wild horses, and wildlife. Modification of spring developments to allow riparian function would improve watershed function. Construction and maintenance of water developments in intact playas and lakebeds put these systems at risk of negative impacts on watershed function of capture, storage, and release because of increased compaction, loss of vegetation, and damage to the confining layer.

The western juniper woodlands management goals and actions focus on meeting public demand for products. This may or may not have negative impacts, but with undeveloped BMP's, there is an increased risk of negative effects to watershed function (capture, storage, and release) due to change in vegetation communities and increased compaction.

The special status plant species management goals and actions focus on individual species and has one RNA

and ACEC, the Lost Forest. This management does not achieve ecological or watershed goals and thus has risks for negative effects towards watershed function.

The noxious weeds and competing undesirable vegetation management goals and actions focus on integrated management. The populations of noxious weeds and competing undesirable vegetation have increased negative effects on watershed function by decreasing the amount of water captured and an increasing use of water onsite.

The water resources and watershed health management goals and actions focus on maintaining current conditions and use. This puts watershed function at risk due to use of minimum standards for road building and other management. Restoration would be on a case-by-case basis without watershed analysis. Because BMP's are prescribed on a case-by-case basis without long-term effectiveness monitoring, there is a risk to watershed functions.

The fish and aquatic habitat management goals and actions focus on instream and near stream condition and use. Protection of fish habitat, riparian areas, and streams do support a healthy watershed.

Under Wildlife and Wildlife Habitat, management of special status animal species focuses on maintenance, restoration, or enhancement of habitat. This would support watershed function by moving vegetation and soil conditions closer to potential natural community. Managing for a single species can put watershed functions at risk because an ecological, holistic approach is not used and the interaction of watershed function and multiple species needs to be addressed.

The livestock grazing management actions would authorize 108,234 AUM's for livestock grazing. Temporary nonrenewable grazing use would also be allowed. While this can be achieved with no negative impacts to watershed function, there currently are areas with poor vegetation and soils conditions. In these areas, there are negative impacts to watershed functions of capture, storage and release.

The wild horse management goals and actions focus on continuation of horses using the range near Paisley and Beaty Butte. Wild horses have negative impacts to watershed function by increased water consumption and compaction at waterholes, and overuse can degrade vegetation and soil conditions. Currently there are areas with poor vegetation and soils condition, negatively impacting watershed functions of capture, storage, and release. Because the restoration of poor condition, unhealthy rangelands in the Paisley Desert would remain a low priority, negative effects would possibly get worse.

The SMA management goals and actions focus on maintaining current number of special management areas with limited increase of acreage. Areas in special management are at lower risk of damage to watershed function then areas under multiple use management. This alternative has a risk for negative impacts to watershed function.

The fire management goals and actions focus on suppression, rehabilitation, and fuels reduction treatments. Treatments would occur on 10,000 to 20,000 acres annually. Negative impacts can occur with fire suppression and mechanical treatments due to increased compaction. There is a risk for negative impacts to watershed function.

The recreation management goals and actions focus on maintaining current conditions and use with increase development as indicated by public demand. This alternative has 2,510,908 acres open to OHV's. This use increases the risk of compaction and degraded vegetation or soil condition. This alternative has a risk for negative impacts to watershed function.

The energy and minerals management goals and actions focus on maintaining current conditions and use. This use increases the risk of compaction and degraded vegetation or soil condition. This alternative has a risk for negative impacts to watershed function.

The lands and realty management goals and actions focus on maintaining current conditions and use. Land adjustments which acquire land in good watershed condition would improve overall watershed function. Implementation of rights-of-way for road building and utility corridors increase the risk of compaction and degraded vegetation or soil condition. This alternative has a possibility of both improving and degrading watershed function.

The roads and transportation management goals and actions focus on maintaining current conditions and use. Closing roads not needed or causing resource damage would be considered on a case-by-case basis. Roads increase compaction and degraded vegetation within and near the road bed. Currently the road density by subbasin is shown on Map R-4.

This alternative has a risk for negative impacts to watershed function, but this would be decreased with the closure and obliteration of unneeded roads.

Alternative B

The shrub steppe management goals and actions focus on improving forage for livestock grazing. Restoration goal is to increase forage on degraded landscapes. This would not move the upland watershed vegetation communities towards potential natural community. The desired range of condition for the schrub steppe is a range of vegetation communities including those not at potential natural condition. This has a risk of changing the rate and ability of the watershed to capture (infiltration rate), store (soil pore space), and release (plant use or water subsurface movement). Implementation of this alternative would maintain the upland watershed condition. There is a risk to watershed functions because the amount of compaction and water use by plants has been altered, negatively effecting watershed functions. The risk is greater with implementation of this alternative as compared to Alternative A for shrub steppe management.

The riparian and wetland vegetation management goals and actions focus on achieving proper functioning condition. Restoration is on a case-by-case basis but would not interfere with commodity production. Proper functioning condition is the first step towards achieving the desired range of conditions. It would not achieve the potential natural community or desired condition. Modification of spring developments to allow riparian function would improve watershed function. Construction and maintenance of water developments in intact playas and lakebeds put these systems at risk of negative impacts on watershed function of capture, storage, and release because of increased compaction, loss of vegetation, and damage to the confining layer. The risk is less with implementation of this alternative as compared to Alternative A for riparian and wetland management.

The western juniper woodlands management goals and actions focus on maximizing allowable commercial and public harvest. With the implementation of this alternative, there is an increased risk of negative effects to watershed function (capture, storage, and release) due to increased compaction. Harvesting trees down through a drainage also increase the risk of changing subsurface flow to surface flow increasing erosion. The risk is greater with implementation of this alternative as compared to Alternative A for western juniper management.

The special status plant species management goals and actions focus on individual species and has one RNA and ACEC. This management does not achieve ecological or watershed goals and thus has risks for negative effects towards watershed function. The risk is the same with implementation of this alternative as compared to Alternative A for special status plant species management.

The noxious weeds and competing undesirable vegetation management goals and actions focus on integrated management, increased inventory, and education. Populations of noxious weeds and competing undesirable vegetation may increase with this alternative, thus causing a negative effect on watershed function by decreasing the amount of water captured and increasing use of water onsite. The risk is less with the implementation of this alternative than with implementation of Alternative A for noxious weeds and competing undesirable vegetation management.

The water resources and watershed health management goals and actions focus on maintaining current conditions and protection of the riparian conservation area. This puts watershed function at risk due to minimum standards for road building and other management. Restoration would be on a case-by-case basis with out watershed analysis. Because BMP's are prescribed on a case-by-case basis without long-term effectiveness monitoring, there is a risk to watershed functions. The focus of management in the riparian conservation area does not protect the uplands, thus there is a risk to watershed functions. The risk is less with the implementation of this alternative than with implementation of Alternative A for water resources and watershed health management.

The fish and aquatic habitat management goals and actions focus on instream and near stream condition and use. Protection of fish habitat, riparian areas, and streams do support a healthy watershed, but do not protect the uplands; thus, there is a risk to watershed functions. The risk is greater with implementation of this alternative as compared to Alternative A for fish and aquatic habitat management.

Under Wildlife and Wildlife Habitat, management of special status animal species focuses on maintenance, restoration, or enhancement of habitat. This would support watershed function by moving vegetation and soil conditions closer to potential natural community. Managing for a single species can put watershed functions at risk because the interaction of watershed function and multiple species needs to be addressed. The risk is the same with implementation of this alternative as compared to Alternative A for special status animal species management.

The livestock grazing management actions would

authorize 119,057 AUM's for livestock grazing and optimize temporary nonrenewable grazing use. The increase in the amount of AUM's increases the risk of negative impacts to watershed function. There could be negative impacts to watershed functions of capture, storage, and release. The risk is greater with implementation of this alternative as compared to Alternative A for livestock grazing management.

The wild horse management goals and actions focus on continuation of horses using the range near Paisley and Beaty Butte. Wild horses have negative impacts to watershed function by increased water consumption and compaction at waterholes, and overuse can degrade vegetation and soil conditions. Currently there are areas with poor vegetation and soils condition. There are negative impacts to watershed functions of capture, storage, and release. Restoration of poor condition, unhealthy rangelands in the Paisley Desert would improve watershed function for that area. The risk of negative impacts is less with the implementation of this alternative than with implementation of Alternative A for wild horse management, because of rangeland restoration and changes in allocation based on monitoring.

The SMA management goals and actions focus on increasing the number of special management areas by adding Connley Hills with an increase in total acreage of SMA's. Areas in special management are at lower risk of damage to watershed function then areas under multiple use management. This alternative has a risk for negative impacts to watershed function. The risk is less with the implementation of this alternative than with implementation of Alternative A for SMA's.

The fire management goals and actions focus on suppression, rehabilitation, and fuels reduction treatments. Treatments would occur on 0 to 64,000 acres annually. With the increase of fuel treatment there should be a decrease in wildland fire suppression. There are more impacts from mechanical treatments than prescribed fires. Negative impacts can occur with fire suppression and mechanical treatments due to increased compaction. There is a risk for negative impacts to watershed function. The risk is greater with the implementation of this alternative than with implementation of Alternative A for fire management.

The recreation management goals and actions focus on increasing tourism and recreational use. This alternative has 2,507,474 acres open to OHV's. This use increases the risk of compaction and degraded vegetation or soil condition. This alternative has a risk for negative impacts to watershed function. The risk is greater with the implementation of this alternative than with implementation of Alternative A for recreation management.

The energy and minerals management goals and actions focus on maximizing the amount of land and water available for exploration and development. This use increases the risk of compaction and degraded vegetation or soil condition. This alternative has a risk for negative impacts to watershed function. Revoking the public water reserve withdrawals would decrease our ability to provide for public multiple use and would increase single private use. The area around Abert Lake, especially the north end, would be impacted by removal of lake-level and total dissolved solids stipulations on leasing in Lake Abert. Any development or extraction of lakebed evaporites such as sodium salts would negatively impact water resources of Lake Abert by changing the water cycle of the lake and altering the water chemistry. This alternative has a risk for negative impacts to watershed function. The risk is greater with the implementation of this alternative than with implementation of Alternative A for energy and minerals management.

The lands and realty management goals and actions focus on maintaining current conditions and increasing area that could be used. Emphasizing land tenure and access acquisition for commodity production adjustments for commodity production could preclude acquisition of high resource value property and result in missed opportunities to facilitate management watershed health. Rights-of-way granted in currently excluded areas could have a negative effect by land disturbance from construction which increase compaction and impacts vegetation condition. Expansion of powerline corridors to 2,000 feet could have substantial negative effects due to the increased size of the potential disturbance area. This alternative has a risk for negative impacts to watershed function. The risk is greater with the implementation of this alternative than with implementation of Alternative A for lands and realty management.

The roads and transportation management goals and actions focus on maintaining current conditions and use. Roads increase compaction and degrade vegetation within and near the road bed. This alternative has a risk for negative impacts to watershed function. The risk is greater with the implementation of this alternative than with implementation of Alternative A for roads and transportation management. Closing roads would reduce areas of soil compaction and potential erosion sources.

Alternative C

The shrub steppe management goals and actions focus on restoring and maintaining a diverse composition and structure of vegetation. From a watershed perspective, restoring degraded conditions would move the upland watershed vegetation communities towards potential natural condition. Implementation of this alternative could maintain and improve the upland watershed condition. Implementation of Alternative C has less risk than Alternatives A or B.

The riparian and wetland vegetation management goals and actions focus on identification and development of riparian management objectives. Restoration is on a case-by-case basis. This would move the watershed towards achieving the desired range of conditions. Rehabilitation of developed springs would return flows to channels that would improve watershed function of capture, storage, and release. Determining feasibility of wetland restoration in lakebeds and playas could improve watershed function. Removing roads from riparian conservation area would allow full development of floodplains and reduce sediment loads improving watershed condition. Implementation of Alternative C has less risk than Alternative A, which has less risk than Alternative B.

The western juniper woodlands management goals and actions focus on protection of resource values. This would move the juniper ecosytems toward potential natural community. With the implementation of this alternative, there is a risk of negative effects to watershed function (capture, storage, and release) due to increased compaction. Harvesting trees down in the drainages also increases the risk of changing subsurface flow to surface flow thereby increasing erosion. The risk is less with implementation of this alternative than Alternative A or Alternative B for western juniper management.

The special status plant species management goals and actions focus on restoration and enhancement and creates 11 RNA's and ACEC's. This management moves towards ecological or watershed goals and thus has a low risk for negative effects towards watershed function. The risk is less with implementation of this alternative than Alternative A, which is the same as Alternative B for special status plant species management.

The noxious weeds and competing undesirable vegetation management goals and actions focus on a zero tolerance for noxious weeds. The populations of noxious weeds and competing undesirable vegetation would decrease which would have a positive effect by helping to restore watershed function. The risk is less with the implementation of this alternative than with implementation of Alternative A or Alternative B for noxious weeds and competing undesirable vegetation management.

The water resources and watershed health management goals and actions focus on reducing current impacts and maintaining good condition. This restores watershed function due to decreased road densities; grazing near streams, springs and wetlands; and uses in drainages where activities would adversely impact watershed function. The risk is less with the implementation of this alternative than with implementation of Alternative B, which less than implementation of Alternative A for water resources and watershed health management.

The fish and aquatic habitat management goals and actions focus on instream and near stream condition and use and connectivity. Protection of fish habitat, riparian condition, streams, and the watersheds that support them would support a healthy watershed function. The risk is less with implementation of this alternative as compared to Alternative A, which is less than implementation of Alternative B for fish and aquatic habitat management.

The wildlife and wildlife habitat management of special status animal species focuses on maintenance, restoration, or enhancement of ecosystems. This would support watershed function by moving vegetation and soil conditions closer to potential natural community. The risk is the less with implementation of this alternative as compared to Alternative A, which is the same for implementation of Alternative B for special status animal species management.

The livestock grazing management actions would authorize 86,587 AUM's for livestock grazing. While this can be achieved with no negative impacts to watershed function, there is a risk of negative impacts to watershed functions of capture, storage, and release. The risk is less with implementation of this alternative as compared to Alternative A, which is less than implementation of Alternative B for livestock grazing management.

The wild horse management goals and actions focus on continuation of horses using the range near Paisley and Beaty Butte. Wild horses have negative impacts to watershed function by increased water consumption and compaction at waterholes, and over use can degrade vegetation and soil conditions. There is a risk

for negative impacts to watershed functions of capture, storage, and release. The risk is the same with the implementation of this alternative as with implementation of Alternative B, and less than implementation of Alternative A for wild horse management.

The SMA management goals and actions increases the amount of SMA's with an increase of acreage. Areas in special management are at lower risk of damage to watershed function then areas under multiple use management. The amount of use, such as grazing or recreation, increase the risk of compaction and degraded vegetation or soil condition. This alternative has a decreased risk for negative impacts to watershed function. The risk is less with the implementation of this alternative than with implementation of Alternative B, which is less than implementation of alternative A for SMA management.

The fire management goals and actions focus on limited suppression, native seed rehabilitation, and fuels reduction on 0 to 640,000 acres. With the increase of fuel treatment, there should be a decrease in wildland fire suppression. Fuels treatment would emphasize prescribed fire. Negative impacts can occur with fire suppression and mechanical treatments due to increased compaction. The risk is less with the implementation of this alternative than with implementation of Alternative A, which is less then implementation of alternative B for fire management.

The recreation management goals and actions focus on maintaining and enhancing natural values. With none of the resource area designated open to OHV's, this alternative would begin to restore watershed function. The risk is less with the implementation of this alternative than with implementation of Alternative A, which is less than implementation of Alternative B for recreation management.

The energy and minerals management goals and actions decrease the amount of land open to mining. This use decreases the risk of compaction and degraded vegetation or soil condition, but does not eliminate it. This alternative has a risk for negative impacts to watershed function. The risk is less with implementation of this alternative as compared to Alternative A, which is less than implementation of Alternative B for energy and minerals management.

The lands and realty management goals and actions focus on improving current resource conditions and use. Land adjustments would acquire land in good watershed condition and improve overall watershed function. Implementation of rights-of-way for road building and utility corridors increase the risk of compaction and degraded vegetation or soil condition. There is an increase in rights-of-way exclusion. This alternative has a greater possibility of improving rather than degrading watershed function. The risk is less with the implementation of this alternative than with implementation of Alternative A which is less then implementation of Alternative B for lands and realty management.

The roads and transportation management goals and actions focus on protecting resource values. Closing roads not needed or causing resource damage would be considered on a case-by-case basis. BMP's would be used. Roads increase compaction and degraded vegetation within and near the road bed. This alternative has a risk for negative impacts to watershed function, but this would decrease with protection of resources. The risk is less with the implementation of this alternative than with implementation of Alternative A, which is less then implementation of Alternative B for roads and transportation management.

Alternative D

The shrub steppe management goals and actions focus on restoring and maintaining natural values while providing forage production. Restoration of degraded conditions would be from a watershed perspective. This would move the upland watershed vegetation communities towards potential natural condition. Implementation of this alternative could maintain and improve the upland watershed condition. Implementation of Alternative D has greater risk than Alternative C, but less risk than Alternative A or Alternative B for shrub steppe management.

The riparian and wetland vegetation management goals and actions focus on identification and development of riparian management objectives. Restoration is on a case-by-case basis. This would move the watershed towards achieving the desired range of conditions. Not allowing new water developments in intact playas and lakebeds would decrease the risk of negative impacts to watershed functions. Removing roads, which negatively impact streams from riparian conservation area, would allow full development of floodplains and reduce sediment loads improving watershed condition. Implementation of Alternative D has greater risk than Alternative C, but less risk than Alternative A, which has less risk than Alternative B for riparian and wetland vegetation management.

The western juniper woodlands management goals and actions focus on protection of resource values. This

would move the juniper ecosystems toward potential natural conditions. With the implementation of this alternative there is a risk of negative effects to watershed function (capture, storage, and release) due to increased compaction. Harvesting trees down in the drainages also increases the risk of changing subsurface flow to surface flow increasing erosion. Implementation of Alternative D has greater risk than Alternative C, but less risk than Alternative A, which has less risk than Alternative B for western juniper woodlands management.

The special status plant species management goals and actions focus on restoration and enhancement and creates 12 ACEC/RNA's. This management moves towards ecological or watershed goals and thus has a low risk for negative effects towards watershed function. Implementation of Alternative D has the same risk as Alternative C, but less risk than Alternative A, which has the same risk as Alternative B for special status plant species management.

The noxious weeds and competing undesirable vegetation management goals and actions focus an integrated approach. The populations of noxious weeds and competing undesirable vegetation would decrease and have a positive effect by helping to restore watershed function. Implementation of Alternative D has greater risk than Alternative C, but less risk than Alternative B, which has less risk than Alternative A for noxious weeds and competing undesirable vegetation management.

The water resources and watershed health management goals and actions focus on reducing current impacts and maintaining good condition. This moves towards restoring watershed function due to implementation of BMP's, minimum standards for upland grazing, and evaluation of near stream grazing. Implementation of Alternative D has greater risk than Alternative C, but less risk than Alternative B, which has less risk than Alternative A for water resources and watershed health management.

The fish and aquatic habitat management goals and actions focus on protection and restoration of instream and near stream condition. Protection of fish habitat, riparian condition, streams, and the watersheds that support them would support a healthy watershed function. Implementation of Alternative D has greater risk than Alternative C, but less risk than Alternative A, which has less risk than Alternative B for fish and aquatic habitat management.

Under Wildlife and Wildlife Habitat, management of special status animal species focuses on maintenance, restoration or enhancement of ecosystems. This would support watershed function by moving vegetation and soil conditions closer to potential natural community. Implementation of Alternative D has the same risk as Alternative C, but less risk than Alternative A, which is the same as Alternative B for special status animal species management.

The livestock grazing management actions would authorize 108,234 AUM's for livestock grazing and have temporary nonrenewable grazing use. While this can be achieved with no negative impacts to watershed function, there is a risk of negative impacts to watershed functions of capture, storage, and release. Implementation of Alternative D has greater risk than Alternative C, but less risk than Alternative A, which has less risk than Alternative B for livestock grazing management.

The wild horse management goals and actions focus on continuation of horses using the range near Paisley and Beaty Butte. Wild horses have negative impacts to watershed function by increase water consumption and compaction at waterholes, and over use can degrade vegetation and soil conditions. There is a risk for negative impacts to watershed functions of capture, storage, and release. Implementation of Alternative D has greater risk than Alternative A, which has greater risks than Alternatives B and C.

The SMA management goals and actions increases the amount of SMA's with an increase of acreage. Areas in special management are at lower risk of damage to watershed function then areas under multiple use management. The amount of use, such as grazing or recreation, increase the risk of compaction and degraded vegetation or soil condition. This alternative has a decreases risk for negative impacts to watershed function. Implementation of Alternative D has greater risk than Alternative C, but less risk than Alternative B, which has less risk than Alternative A for SMA's.

The fire management goals and actions focus on limited suppression, native seed rehabilitation, and fuels reduction on 0 to 480,000 acres. With the increase of fuel treatment there should be a decrease in wildland fire suppression. Negative impacts can occur with fire suppression and mechanical treatments due to increased compaction. Implementation of Alternative D has a greater risk than Alternative C, but less than Alternative A, which is less than Alternative B for fire management.

The recreation management goals and actions focus on

maintaining and developing recreational uses. This alternative has 2,447,060 acres open to OHV's. This alternative has a risk of negatively impacting watershed function. Implementation of Alternative D has a greater risk as Alternative C, which is less than Alternative A, which is less than Alternative B for recreation management.

The energy and minerals management goals and actions decrease the amount of land open to mining from the current level. This use decreases the risk of compaction and degraded vegetation or soil condition, but does not eliminate it. This alternative has a risk for negative impacts to watershed function. Implementation of Alternative D has a greater risk as Alternative C, which is less than Alternative A, which is less than Alternative B for energy and minerals management.

The lands and realty management goals and actions focus on maintaining current resource conditions and use. Land adjustments would acquire land in good watershed condition and improve overall watershed function. Implementation of rights-of-way for road building and utility corridors increase the risk of compaction and degraded vegetation or soil condition. There is an increase in rights-of-way exclusion. This alternative has a greater possibility of improving rather than degrading watershed function. Implementation of Alternative D has a greater risk than Alternative C, but less than Alternative A or Alternative B for lands and realty management.

The roads and transportation management goals and actions focus on protecting resource values. Closing roads not needed or causing resource damage would be considered on a case-by-case basis. BMP's would be used. Roads increase compaction and degraded vegetation within and near the road bed. This alternative has a risk for negative impacts to watershed function, but this would decrease with protection of resources. Implementation of Alternative D has the same risk as Alternative C, but less than Alternative A, which is less than Alternative B for roads and transportation management.

Alternative E

The shrub steppe management goals and actions focus on natural restoration. This would move most upland watershed vegetation communities towards potential natural community. Implementation of this alternative could maintain and improve the upland watershed condition. Some vegetation communities would not move towards desired range of condition. Implementation of Alternative E has greater risk than Alternatives D and C, but less risk than Alternatives A or B for shrub steppe management.

The riparian and wetland vegetation management goals and actions focus on natural restoration. This would move the watershed towards achieving the desired range of condition. Implementation of Alternative E has less risk than Alternative C, which is less than Alternative D, which is less than Alternative A, which has less risk than Alternative B for riparian and wetland vegetation management.

The western juniper woodlands management goals and actions focus on natural restoration. This would move the watershed towards achieving the desired range of conditions. Implementation of Alternative E has less risk than Alternative C, which is less than Alternative D, which is less than Alternative A, which has less risk than Alternative B for riparian and wetland vegetation management.

The special status plant species management goals and actions focus on restoration and protection with no new ACEC/RNA's. This management moves towards ecological or watershed goals and thus has a low risk for negative effects towards watershed function. Implementation of Alternative E has a greater risk than Alternative D and C, but less risk than Alternatives A and B for special status plant species management.

The noxious weeds and competing undesirable vegetation management goals and actions are limited. Populations of noxious weeds and competing undesirable vegetation would increase and have a negative effect on watershed function. Implementation of Alternative E has greater risk than all other alternatives for noxious weeds and competing undesirable vegetation management.

The water resources and watershed health management goals and actions focus on natural restoration. This would move most upland watershed vegetation communities towards potential natural community. Implementation of this alternative could maintain and improve the upland watershed condition. Some vegetation communities would not move towards desired condition. Implementation of Alternative E has greater risk than Alternative C, but less risk than Alternatives D, A, or B for water resources and watershed health management.

The fish and aquatic habitat management goals and actions focus on natural restoration. Long-term restoration of fish habitat, riparian condition, streams,

and the watersheds that support them would support a healthy watershed function. Implementation of Alternative E has less risk than all the other alternatives for fish and aquatic habitat management.

Under Wildlife and Wildlife Habitat, management of special status animal species focuses on natural restoration. This would support watershed function by moving vegetation and soil conditions closer to potential natural community. Implementation of Alternative E has less risk than Alternatives C and D, which is less than Alternatives A and B for special status animal species management.

There would be no permitted livestock grazing. This reduces the risk of negative impacts from livestock grazing. Implementation of Alternative E has less risk than Alternative C, which is less than Alternative D, which is less than Alternative A, which is less risk than Alternative B for livestock grazing management.

The wild horse management goals and actions focus on continuation of horses using the range near Paisley and Beaty Butte. Wild horses have negative impacts to watershed function by increased water consumption and compaction at waterholes, and over-use can degrade vegetation and soil conditions. There is a risk for negative impacts to watershed functions of capture, storage, and release. Implementation of Alternative E has the same risk as Alternative D, which has a greater risk than Alternative A, which has greater risk than Alternatives B and C.

There would be no SMA's or commodity use. The risk of damage to watershed function is minimal because of the decrease in commodity uses. Implementation of Alternative E has less risk than Alternative C, which is less than Alternative D, which is less than Alternative B, which is less risk than Alternative A for SMA management.

Fire managment actions would focus primarily on protecting life and property. As a result, fire suppression activities would be reduced. Negative impacts can occur with fire suppression due to increased compaction of soils from equipment. Implementation of Alternative E has less risk than Alternative C which is less than Alternatives A and D, which are less than Alternative B for fire management.

The recreation management goals and actions focus on maintaining or minimizing current use. This alternative has no acres designated open to OHV's. This alternative would help restore watershed function. Implementation of Alternative E has less risk than Alternative C, which is less than Alternative D, which is less than Alternative A, which is less risk than Alternative B for recreation management.

The energy and minerals management goals and actions would withdraw the entire resource area from mining. This would significantly reduce the risk to watershed function. Implementation of Alternative E has less risk than Alternative C, which is less than Alternative D, which is less than Alternative A, which is less risk than Alternative B for energy and minerals management.

The lands and realty management goals and actions focus on maintaining current land status with a small amount of disposal possible. The entire resource area would be a rights-of-way exclusion area. This would reduce the risk to watershed function. Implementation of Alternative E has less risk than Alternative C, which is less than Alternative D, which is less than Alternative A, which is less risk than Alternative B for lands and realty management.

The roads and transportation management goals and actions focus on maintaining existing road system. Closing roads not needed or causing resource damage would be considered on a case-by-case basis. Roads increase compaction and degraded vegetation within and near the road bed. This alternative has a risk for negative impacts to watershed function, but this would decrease with protection of resources. Implementation of Alternative E has greater risk than Alternative C, which is the same as Alternative D, which is less than Alternative A, which is less risk than Alternative B for roads and transportation management.

Summary of Impacts

Under Alternative A, water resources and watershed health could continue to improve, although recovery rates and extent of recovery would be reduced to allow for commodity uses, including livestock, transportation and recreation. Management would continue on a case-by-case, site-specific basis with less consideration for watershed-scale effects. The management goals for water resources and watershed health would be difficult to achieved under this alternative.

Impacts from Alternative B would be the similar to Alternative A because of law and policy ("Endangered Species Act" and CWA, etc.) setting a high minimum standard. Because of the priority on commodity production the risk of negative impacts would increase as would the cost and effort of implementation. Mini-

mally acceptable conditions would be required and mitigation would occur on a case-by-case basis rather than on a watershed scale. While improvements could occur, they would take longer and not be as extensive as would occur under Alternative A. The management goal for water resources and watershed health would be more difficult to achieved under this alternative then Alternative A.

Impacts from Alternative C would be much less that under Alternative A. Recovery rates would be much faster and the final results would be better for water resources and watershed health conditions. Watershed-scale effects at the levels specified in Alternative C would result in more stable conditions. The management goal for water resources and watershed health would be achieved under this alternative.

Impacts from Alternative D would be less that under Alternative A. Impacts of implementation of water resources and watershed health guides are similar to Alternative C, including BMP implementation but with less stringent direction to restore watershed function and processes. More consideration is given to watershed-scale effects than under the current management. The management goal for water resources and watershed health could be achieved under this alternative.

Impacts from Alternative E would be less that under Alternative A, except for noxious weeds. Without disturbance from commodity production and permitted uses, water resources and watershed health, in most cases, would quickly improve and would progress to a later plant community. However, some habitats would need some type of active restoration, such as headcut stabilization, or vegetation restoration to acheive recovery within a 15 to 20 years. The management goal for water resources and watershed health could be achieved under this alternative.

Secondary, Indirect, and Cumulative Impacts

Management which has or could affect our ability to achieve water resource and watershed health goals include any past, present, or future land-disturbing activities in the watersheds. This includes activities which take place on the USFS, state, or private lands, and includes past grazing, timber harvest, or road building. The complex system of water diversions including dams, diversions, canals, and the draining and ditching of wetlands all have cumulative effects on the land BLM manages. These activities and uses are considered when decision are made on BLM management. The cumulative effects are the same for all alternatives.

Since the late 1800s, the overall watershed health of the public lands has improved. The damage can still be observed in streams as increased peak flows, decreased base flows, and increased sediment loads and loss of fish habitat. The damage to upland vegetation and soils conditions is still occurring in systems that can not recover without active restoration.

Noxious weeds and competing undesirable vegetation is the one area that has not improved since the late 1800s. This situation overshadows all desired conditions and changes the path of evolution for specific plant communities. It also can prevent attainment of desired conditions if not controlled on adjacent lands.

Fish and Aquatic Habitat

Management Goal—*Restore, maintain, or improve habitat to provide for diverse and self-sustaining communities of wildlife, fishes, and other aquatic organisms.*

Assumptions

- Analysis of effects on stream habitat also represents effects on lake or reservoir habitat.
- Management activities that improve vegetation in uplands and riparian areas are assumed to decrease flood magnitude and frequency and to improve late season flows. Additionally, improvement in riparian/wetland vegetation would have a direct improvement on fish and aquatic habitat.
- Effects of water quality management plans or total maximum daily loads on fish habitat under all alternatives are expected to be positive.
- Implementation of the “Recovery Plan for the Threatened and Rare Native Fishes of the Warner Basin and Alkali Subbasin” would be beneficial for all native fish in the Warner Watershed as would compliance with biological opinions for the sucker.

Analysis of Impacts

Alternative A

Minimum standards for roads and other construction activities would provide minimal protection for fish

and aquatic habitat from degradation due to erosion and sedimentation. Watershed condition improvement is based on specific problem areas rather than by entire watersheds, so additional watershed-level effects from sediment production and flood events would be greater than potential. Closing selected roads would have localized positive effects. Current exclosures and grazing systems have improved many riparian areas and this improvement is predicted to continue. Riparian objectives are determined based on proper functioning condition levels, so consideration of potential is lacking and could result in poorer conditions. As discussed in Chapter 2, proper functioning condition is only a beginning point, with desired range of condition usually being a much more improved state; so, by setting objectives based on proper functioning condition only, development to full potential of the habitat could be precluded or not described adequately.

Because management designed to improve water quality and to meet ODEQ standards would result in improved watershed, stream conditions, and water quality, these measures would improve fish and aquatic habitats. The goal of reducing summer temperatures would result in less stress to stream resident fish, thus improving survival rates. Reduced sediment loads would improve spawning gravels.

Because of the ability to adjust development sites, thereby avoiding fish and aquatic habitats, oil and gas developments should have little impact unless the access roads to the sites or crosscountry travel and exploration are associated with these habitats. In these cases, sediment could be increased and vegetation disturbed. Geothermal exploration and development would have similar impacts as oil and gas, but an additional concern is what effects development could have on the ground water aquifers that supply springs. Effects could be both to temperature and flow of springs altering the habitats. Foskett Spring is of special concern.

Exploration for sodium salts could have impacts to the aquatic habitats associated with the development of drill pads and roads especially around Abert Lake. Development of a sodium mine would impact a much larger area and would lower lake levels altering the water availability to the shoreline vegetation. The springs near the lake, including XL Spring, could be impacted by lowered water tables and directly by the plant construction and operation. While minimum lake levels are prescribed by the current plan, lowering the lake to these levels in 1 year could result in lower levels in following years because of low imput due to drought or increased irrigation demand. Wells developed to support mine operations could have a direced impact to the shoreline springs. Impacts would depend on the location of the plant and direction and location of access and shipping routes.

Impacts from locatable minerals development and exploration would depend entirely on the location of the work. Prospecting would have little impact. Exploration could result in surface disturbance including road construction. Increased sediment production could be expected. Mine development could result in increased runoff, sediment, and contamination of water with chemicals. The extent of impact would depend on the location of the mine in proximity to habitats. Expected development at Tucker Hill, Sunstone Area, and Christmas Valley diatomite operations would have little effect on fish and aquatic habitats. Instream suction dredging could increase sediment production, alter width/depth and other channel characteristics, and disturb or remove shoreline vegetation.

Impacts from salable mineral development would depend on the location of the development, but should be minimal based on the ability to modify location of the site. Reclamation of 20 sites would improve ground cover, reducing erosion and runoff potential, and could be beneficial to fish and aquatic habitats.

Land tenure adjustments could be made to improve fish and aquatic habitats. These habitats are considered in land actions to minimize adverse effects. The acquisition of parcels along Twelvemile Creek would allow instream improvements to benefit fish and aquatic habitats. Rights-of-way development could have negative effects with increased sediment production and vegetation removal and disturbance. Depending on the location and type of rights-of-way, mitigation can minimize effects. Rights-of-way involving roads would have greater impacts than small powerlines for example. Access acquisition could be beneficial if it facilitated management of fish and aquatic habitats; however, if roads are constructed to complete access, increased sediment and runoff could result.

Improving ecological conditions would benefit aquatic habitats by reducing flood frequency and flow, increasing infiltration, and extending flows later into the season. Improving ecological conditions along streams and other riparian habitats would have direct improvement to these habitats. The extent of impacts from vegetation manipulation would need to be determined on a case-by-case basis depending on the implementation method and location. While vegetation manipulation projects may have short-term negative impacts as ground is disturbed (such as by fire and disking), and

runoff and sedimentation increases, there should be long-term positive impacts as ground cover increases, thereby reducing runoff and sedimentation.

Limiting improvement based on proper functioning condition would minimize the improvement potential of fish and aquatic habitats over what would be possible based on potential of the site, especially if the improvement is focused on the riparian/wetland site instead of the overall watershed. As discussed in Chapter 2, proper functioning condition is only a beginning point, with desired range of condition usually being a much more advance state; so, by setting objectives based on proper functioning condition only, development to full potential of the habitat could be precluded or not described adequately.

Commercial forest management would have minimal impacts to fish and aquatic habitats due to the low amount of commercial forest lands in the planning area and their location compared to habitats. While some increase in runoff and sediment could be expected, they could be reduced by following mitigation and current harvest standards. By improving ground cover, juniper management would benefit fish and aquatic habitats when runoff and erosion is reduced. Juniper management associated with riparian/wetland habitats has a direct beneficial effect and may increase flows at springs (refer to Management Goal 2, Forest and Woodlands). Current prohibition of juniper management in Deep, Twentymile, and Twelvemile Creek Canyons would continue to degrade the uplands and associated stream conditions.

Where special status plant habitats are associated with fish and aquatic habitats, considering the effects to the special status species would decrease impact to the associated fish and aquatic habitat. However, emphasizing management based on individual species instead of habitats could limit the amount of possible improvement. Weed control would have positive effects on fish and aquatic habitats by improving ground cover and decreasing competition with more desirable riparian/wetland plant species.

Limiting new livestock water developments in playas would protect the habitats of the aquatic species that depend on the natural conditions.

Limiting livestock use on bitterbrush to meet deer winter range needs could result in lighter riparian use and would be beneficial to fish and aquatic habitats. Livestock exclosures have maximized riparian improvement and recovery rates to the extent possible without structural work, so maintenance of the exclosures would be beneficial.

Road closures may improve fish and aquatic habitats if they reduce runoff and erosion. The road closures and rehabilitation could restore floodplain functioning and reduce direct channel impingement.

Fish and aquatic habitats associated with special status species habitats, for listed, candidate, and Bureau species, would benefit from targeting the special status species habitat for improvement, including implementation of conservation agreements and recovery plans. Emphasizing individual species over habitats and watershed-level effects would reduce the extent and level of improvement. Emphasizing individual species could have the effect of benefitting one species over another which alters the effect of improvement to fish and aquatic habitat.

Impacts to fish and aquatic habitats from livestock grazing authorization are site specific and closely tied to impact on associated vegetation. Direct impact to banks from trampling and hoof action, as well as water contamination from livestock waste products, can also occur. Current livestock management has improved conditions on most aquatic habitats; however, on some springs and streams the grazing authorization is having an adverse impact to the riparian areas. The sites that are adversely effected are usually small, isolated reaches more associated with private lands. Authorization of temporary nonrenewable grazing use precludes the excess vegetation from being left for ground cover and litter development and further enhancement of watershed conditions and fish and aquatic habitat.

There are no fish habitats associated with herd management areas. Wild horses use the herd management areas year-round and impact aquatic habitats negatively in those areas, especially the springs in the Beaty Butte Herd Management Area. Confining horses to herd management areas prevents damage to sites outside these areas. Control of horse numbers would have some beneficial effect, but because of concentration of use on the springs, the effect is limited as damage occurs from a minimal amount of season long use and the additional use by greater numbers has little additional effect. Unless riparian sites are addressed specifically, restoration of poor condition, unhealthy rangelands in the Paisley Desert Herd Management Area would have little effect. Maintenance and construction of water developments for horses could be disruptive to aquatic habitats. By controlling use on aquatic habitats, fence construction to control wild horse use could be beneficial.

Limiting land disturbing activities within identified Native American religious sites or traditional cultural properties could preclude some activities such as vegetation manipulation, property exchange, or structural improvement that would be beneficial to fish and aquatic habitats. Traditional uses may impact fish and aquatic habitats by vegetation removal.

Recreation activities in special recreation management area's may have some effect on fish and aquatic habitat, but the effects would be limited if current activity levels continue. Because use tends to concentrate around aquatic habitats, recreation activities could have negative effects through channel alteration and vegetation removal. Effects from development of recreation sites and tourism opportunities and special recreation permits would be site specific and could be minimized by design. Controlling public use with special recreation permits would be beneficial. OHV activity has site-specific impacts that can be severe when associated with fish and aquatic habitats. Even though OHV control is limited under this alternative, any control of use, as in specific closures and WSA's, would be beneficial. More diverse effects occur at the watershed scale and can result in increased sediment production. No specific areas have been identified as having impact from OHV, but there are numerous areas of use scattered across LRA. Some of these areas are on two-track roads not on the transportation plan and others are on open areas and hill sides.

Managing WSA's as VRM Class I could preclude some management actions beneficial to fish and aquatic habitats such as instream structures and watershed-level vegetation management, especially juniper. These effects would apply to acquired lands incorporated into WSA's.

Current ACEC and RNA designations have no effect on fish and aquatic habitats. Interim protection of outstandingly remarkable values for WSR's could preclude some management actions beneficial to fish and aquatic habitats such as instream structures and watershed-level vegetation management, especially juniper.

The effect of making contracts for services and sale of products available to local firms would be site specific. However, if competition is limited, the cost of projects to improve fish and aquatic habitats could be greater so fewer projects would be developed. Continuing commodity production levels could result in excessive use on some areas and continued facility operation—especially some roads—could result in channel effects and sedimentation.

Fire control activities including line construction, aerial retardant application, and engine access can have negative effects to fish and aquatic habitat values. Effects would need to be determined on a case-by-case basis. Emergency fire rehabilitation should be beneficial by reducing soil loss and sediment production by fireline stabilization and increased ground cover.

Prescribed fire can be an effective tool for increasing ground cover and releasing quaking aspen stands and spring-associated habitats from competition with invasive species, and would be beneficial to fish and aquatic habitat values. The current level of activity is inadequate to meet a return to a natural fire cycle; as a result, some sites would continue to decline in ground cover amounts.

Alternative B

This alternative introduces the concept of riparian conservation areas management that would be beneficial to fish and aquatic habitat. Corridor fencing of streams would increase maintenance and cost, but would result in substantial improvement to currently grazed streams.

To protect mineral development opportunities, restricting designation of management areas and land disposal could result in increased impacts to fish and aquatic habitats and lost opportunity to acquire valuable habitats through exchange. The springs near Lake Abert, including XL Spring, could be impacted by lowered water tables and directly by the plant construction and operation, especially if current restrictions for minimum lake level are lifted. Wells developed to support mine operations could have a direced impact to the shoreline springs. Impacts would depend on the location of the plant and direction and location of access and shipping routes.

Emphasizing land tenure adjustments for commodity production could preclude acquisition of high resource value property. Rights-of-way granted in currently excluded areas could have a negative effect by land disturbance from construction. Expansion of powerline corridors to 2,000 feet could have substantial negative effects due to the increased size of the potential disturbance area. Emphasizing access acquisition for commodity production could result in missed opportunities to facilitate management of fish and aquatic habitats. No withdrawal of mining and mineral leasing could result in negative effects to fish and aquatic habitats should development occur on lands that would have been undisturbed.

Optimizing forage production implies more extensive use that could result in less ground cover and impacts to habitats. Setting a desired range of condition would be beneficial by recognizing the potential of the site. Improving ecological conditions along streams and other riparian habitats would have direct improvement to these habitats but the improvement would be restricted because of the noninterference requirement to commodity production.

Spring function improvement would occur but would be limited because of the noninterference requirement to commodity production.

The effects resulting from public and commercial use of juniper would depend on harvest criteria and restrictions placed on harvest.

Allowing new livestock water developments in playas could have negative impacts to the aquatic habitats associated with intact lakes.

Road closures may improve fish and aquatic habitats if they reduce runoff and erosion, but limiting closures to those that would not impact commodity resources could limit the improvement. Implementing BMP's would benefit fish and aquatic habitats by minimizing impacts to these habitats and reducing erosion. Prohibiting water right acquisition could preclude opportunities for fish habitat improvement.

Impacts to fish and aquatic habitats from livestock grazing authorization is site specific and closely tied to impact to associated vegetation, including the allocation of additional AUM's. Emphasizing project construction over grazing management actions could reduce the rate and extent of potential improvements. Construction of additional water developments could have a direct negative impact to aquatic habitats. Optimizing the authorization of temporary nonrenewable grazing use precludes the excess vegetation from being left for ground cover and litter development and further enhancement of watershed conditions and fish and aquatic habitat.

If additional forage from adjustment of appropriate management levels is allocated to livestock, the improvement to aquatic habitats associated primarily with springs would be reduced over nonallocation. However, livestock can be managed to provide seasonal rest or deferment, so some improvement could be expected.

Maximizing OHV events could increase impacts to fish and aquatic habitats from additional erosion and sedimentation resulting in a loss of clean gravel sites.

Emergency fire rehabilitation should be beneficial by reducing soil loss and sediment production by fireline rehabilitation and increased ground cover; however, allocation of additional forage to livestock would reduce benefits.

Alternative C

Setting standards for watershed and soil conditions would allow determination of progress towards meeting those standards. Closing roads would reduce sedimentation and improve aquatic habitats, although with some exceptions, impacts to fish habitats from roads that could be moved are not great in the planning area. Following BMP's for grazing or eliminating this use from areas not meeting objectives would improve fish and aquatic habitats. Managing for watershed improvement on the entire associated watershed would result in more stable conditions and improved fish and aquatic habitats.

Effects from closing areas to mineral entry would depend on the location of the closure, but the effect could be very benefical.

Limiting rights-of-way to designated corridors would minimize additional impacts to fish and aquatic habitat. Access acquisition could be beneficial if it facilitated management of fish and aquatic habitats; however, if roads are constructed to complete access, increased sediment and runoff could result—consideration of natural values would minimize these effects. Acquisition of high value resources, including riparian/wetland habitat, would be a beneficial impact.

Minimizing forage production and range improvements could improve fish habitat by reducing direct and indirect impacts from grazing, and especially direct effects from water developments.

Designation and management of riparian conservation area would be beneficial to fish and aquatic habitat.

Rehabilitation of developed springs would return flows to channels that would create additional habitats for aquatic species. One example of this is the development at Falls Spring where most flow is diverted to a trough, but spring snails are located in the natural outflow channel left with the remaining water. Returning more flow to the channel would create more secure and better habitat.

Removing roads from riparian conservation areas would allow full development of floodplains and reduce sediment loads improving fish and aquatic habitats.

By improving ground cover, juniper management, as described in Management Goal 2 of the Forest and Woodlands section, would benefit fish and aquatic habitats when runoff and erosion is reduced. Juniper management associated with riparian/wetland habitats has a direct beneficial effect and may increase flows at springs; and from a watershed level, provides increased and longer lasting stream flows. Limiting stand treatment to 10 percent by wood cutting could reduce benefits and limiting treatment to 50 percent of stands with fire would reduce benefits. Some areas would need treatment outside of fire to be effective.

Managing special status plant habitats based on desired range of conditions and landscape-level effects would stabilize improvement trends and allow for better long-term conditions over emphasizing management based on individual species. Increased emphasis on weed control would extend the benefits of this program.

Determining feasibility of wetland restoration in lakebeds and playas could lead to improve aquatic habitats.

Considering nongame species across the planning area could result in additional positive effects to fish and aquatic habitats over concentrating on game species only. Many wildlife species in the Great Basin are dependent on riparian habitat for all or part of their life cycle needs. Improving conditions for all wildlife species should relate directly to fish and aquatic habitat improvements.

Restricting OHV use could benefit some fish aquatic habitat, or prevent problems from occurring. At Twelvemile Creek, OHV's have eroded a hillside which is creating a direct sediment input to the stream. Preventing OHV use would allow the site to heal and stop erosion and site degradation.

Emphasizing fish and aquatic habitats and only allowing use that promotes progress toward attainment of instream processes would have direct beneficial effects, especially related to watershed-scale effects. Acquisition of water rights for conversion to instream flows would have substantial benefits by stabilizing flows and maximizing riparian conditions.

Impacts to fish and aquatic habitats from livestock grazing authorization is site specific and closely tied to impacts to associated vegetation. Beneficial effects to fish and aquatic habitats would occur from grazing systems that maximize improved riparian conditions.

Allowing excess forage that would have been authorized under temporary nonrenewable grazing use to remain ungrazed would increase ground cover and litter development by reducing overland flow of water and resulting erosion would have a beneficial effect on watershed conditions and fish and aquatic habitat.

Increasing AUM's allocated to wild horses while maintaining numbers in the Beaty Butte Herd Management Area would reduce overall use if livestock allocation is reduced, but there would be little change in impact to aquatic habitats. Maintenance and construction of water developments for horses could be disruptive to aquatic habitats. By controlling use on aquatic habitats, fences could be beneficial. Seeding or erosion control could provide some benefit to aquatic habitats.

Managing WSR's as VRM Class II could preclude some management actions beneficial to fish and aquatic habitats such as instream structures and watershed level vegetation management, especially juniper.

Alternative D

Because management designed to restore water quality would result in improved watershed, stream conditions, and water quality, these measures would improve fish and aquatic habitats.

Impacts from implementation of energy and mineral resources would be the same as in Alternative C, with the possibility of development of additional acreage causing additional effect.

Limiting rights-of-way to designated corridors would minimize additional impacts to fish and aquatic habitats. Access acquisition could be beneficial if it facilitated management of fish and aquatic habitats; however, if roads are constructed to complete access, increased sediment and runoff could result—consideration of natural values would minimize these effects. Acquisition of high value resources in Zones 1 and 2, including riparian/wetland habitat, would be a positive impact.

Designation and management of riparian conservation areas and establishing desired range of conditions and managment objectives would be beneficial to fish and aquatic habitat. Spring function improvement would occur, but would be limited because of the requirement to supply stock water. Considering watershed-level effects and setting objectives based on desired range of condition would be beneficial.

By improving ground cover, juniper management, as described in Management Goal 2, Forest and Woodlands, would benefit fish and aquatic habitats as runoff and erosion are reduced. Juniper management associated with riparian/wetland habitats has a direct beneficial effect and may increase spring flows.

Managing special status plant habitats based on desired range of conditions and landscape-level effects would stabilize improvement trends and allow for better long-term conditions over emphasizing management based on individual species.

Determining feasibility of wetland restoration in lakebeds and playas could lead to improved aquatic habitats. Limiting new livestock water developments in playas would protect the habitats of the aquatic species that depend on the natural conditions.

Considering nongame species across most areas could result in additional positive effects to fish and aquatic habitats over concentrating on game species only. Many wildlife species in the Great Basin are dependent on riparian habitats for all or part of their life cycle needs. Improving conditions for all wildlife should relate directly to fish and aquatic habitat improvements.

Additional road closures may improve fish and aquatic habitats if they reduce runoff and erosion. The closures and rehabilitation could restore floodplain functioning and reduce direct channel impingement. Exclosures have maximized riparian improvement and recovery rates, so maintenance of the exclosures would be beneficial.

Acquisition of water rights for conversion to instream flows would have substantial benefits by stabilizing flows, maintaining water in habitats, and maximizing riparian conditions. Setting objectives based on site potential would be beneficial.

Control of wild horse numbers would have some beneficial effect, but because of the concentration of use on the springs, this effect would be limited as damage occurs from a minimal amount of season long use and the additional use by greater numbers has little added impact. If additional forage from adjustment of appropriate management levels is allocated to livestock, the improvement would be reduced; however, livestock can be managed to provide seasonal rest or deferment, so some improvement could be expected. Increasing AUM's allocated to wild horses while maintaining numbers in the Beaty Butte Herd Management Area would reduce overall use if livestock allocation is reduced, but there would be little change in impact to aquatic habitats. Maintenance and construction of water developments for horses could be disruptive to aquatic habitats. By controlling use on aquatic habitats, fences could be beneficial. Seeding or erosion control could provide some benefit to aquatic habitats.

Managing WSR's as VRM Class II could preclude some management actions beneficial to fish and aquatic habitats such as instream structures and watershed level vegetation management, especially juniper.

Alternative E

Allowing natural processes only to restore watershed and ecological conditions could slow recovery as opposed to using active restoration techniques, especially in pool and spawning gravel developments. Reduction of soil erosion and associated siltation of spawning areas could be reduced. Closing all roads, except those required by law, if rehabilitated, would be beneficial by reducing sediment production and promoting full floodplain development. Elimination of livestock use would allow full development of riparian vegetation at a faster rate. Increased willow and other woody vegetation cover would stabilize banks and provide increased shading and cover. Not rehabilitating after wildland fire could reduce ground cover and increase sediment production. Water quality and the benefits to fish from reduced sedimentation and lower water temperatures would be similarly impacted.

Elimination of mineral entry, energy and mineral leasing, and mineral material disposal would preclude any impacts to fish and aquatic habitat as described in Alternative A.

No option is permitted for acquiring habitats, so sites that could be better protected under Federal ownership would be lost and further habitat degradation could occur.

Rights-of-way exclusion would preclude any impacts to fish and aquatic habitat as described in Alternative A. Loss of access rights and not developing new access roads would preclude any impacts to fish and aquatic habitat as described in Alternative A.

Allowing natural processes only to define vegetation composition would allow the spread of weeds that could reduce ground cover and replace more desirable riparian vegetation. Sites that would respond to woody vegetation plantings would be delayed in recovery.

Lack of spring development maintenance would eventually lead to the failure of the development and the return to a natural spring function and in many cases increased riparian habitat.

No road maintenance or closures would result in substantial increases in sediment production and subsequent siltation of spawning beds. Over time, the sediment production would stop and there would be an overall decrease in siltation and the effect of closing and rehabilitating the roads. The effects of juniper encroachment would occur at a watershed scale.

Lack of juniper management would result in decreased ground cover as the juniper canopy closes. Sediment production would increase and quaking aspen stand conversions would continue. Some springs and their associated aquatic habitat would decline as juniper dewater the springs.

Increasing AUM's allocated to wild horses in the Beaty Butte Herd Management Area would create additional impact to aquatic habitats associated with springs. Maintenance and construction of water developments for horses could be disruptive to aquatic habitats. Removing interior fencing in herd management areas could result in additional use and degradation of fish and aquatic habitats.

Restricting OHV use could benefit some fish aquatic habitat, or prevent problems from occurring.

Summary of Impacts

Under Alternative A, fish and aquatic habitats would continue to improve, although recovery rates and extent of recovery would be reduced to allow for commodity uses, including livestock, transportation, and recreation. Management would continue on a case-by-case basis on a site-specific level with less consideration for watershed-scale effects. The management goal for fish and aquatic habitats could be achieved under this alternative.

Impacts from Alternative B would be the similar to Alternative A. Because of law and policy ("Endangered Species Act," CWA, etc.) setting a high minimum standard, the difference in effects would be less than would occur otherwise. Generally, minimally acceptable conditions would be required and mitigation would occur on a case-by-case basis rather than on a watershed scale. While improvements would occur, they would take longer and not be as extensive as would occur under Alternative A. The management goal for fish and aquatic habitats could be achieved under this alternative, although at a much slower rate.

Impacts from Alternative C would be much less than under Alternative A. Recovery rates would be much faster and would result in better fish and aquatic habitat conditions. Considering watershed-scale effects at the levels specified in Alternative C, would result in more stable conditions. The management goal for fish and aquatic habitats could be achieved sooner and would be the most desirable for these resources, under this alternative.

Alternative D impacts of implementation of water resources and watershed health guides are similar to Alternative C, including BMP implementation, but with less stringent direction to restore watershed function and processes, there would be less improvement to fish and aquatic habitat. More consideration is given to watershed-scale effects than under the current management. The management goal for fish and aquatic habitats could be achieved under this alternative, the results would not be as fast nor progress as far as under Alternative C but faster and better than Alternatives A and B.

Alternative E would result in a mixed effect. Without disturbance from permitted uses, fish and aquatic habitats in most cases would quickly improve and would progress to a later plant community. However, some habitats would need some type of active restoration, such as headcut stabilization to prevent loss of habitat or recovery within a 15 year period. Watershed scale effects would also be mixed with natural recovery of uplands progressing well, but with increased juniper encroachment continuing to degrade watershed level effects to fish and aquatic habitats. The management goal for fish and aquatic habitats could be achieved under this alternative. This alternative would achieve goals at a rate and end point similar to Alternative C except on areas needing active restoration.

Secondary, Indirect, and Cumulative Impacts

Actions that have a cumulative effect on watershed function, especially in relation to the watersheds ability to capture, store, and slowly release water, would ultimately effect fish and aquatic habitat. On most forested watersheds in the planning area, the equivalent clear cut acres cumulative watershed effects model evaluations indicate that timber harvest and road construction, along with channel incision and channelization has resulted in increase flood flows, increased frequency of floods, and floods that occur earlier in the season. The Deep Creek, Thomas Creek, and Chewaucan Watershed assessments have demon-

strated these changes to some degree in each watershed. The change in the hydrograph as a result has impacted channel form and thereby fish and aquatic habitat. The cumulative effects that built to our current conditions are now being reversed as forest health improvements are implemented. The cumulative effect of these projects would build over time to again return to better fish and aquatic habitat conditions.

Irrigation development has impacted both habitat and fish directly. Water withdrawal increases water temperature and may at times dewater streams removing any fish habitat available. Diversion structures and channelization has fragmented habitats by preventing the access of some stream habitats by fish or by preventing access to more secure water in times of drought. The connection between Honey Creek and Hart Lake is blocked by several diversions that do not allow adequate passage for fish, and the diversions are not screened to prevent fish from being stranded in fields. Major modifications to Deep and Twentymile Creeks has resulted in the loss of connectivity between these streams and Crump Lake. Most of the diversion structures could be modified to improve connectivity and still provide for irrigation.

Lack of fire has impacted vegetative communities by increased brush and conifer invasion. As canopy cover closes, ground cover from grasses and forbes is reduced, decreasing infiltration and reducing late-season flows. Increased erosion and sediment loads may impact spawning sites. Grazing has added to this process by removing fine fuels and reducing fire size and frequency, and by reducing competition, enabling better establishment of brush and conifers (juniper).

The introduction of predatory game fish to the planning area has effected the ability of native fish to thrive and in some cases survive. Crappie, bass, and bullhead in Warner Valley have reduced the ability of native trout and suckers to thrive in the lakes. Higher in the watershed, brook trout compete directly with native redband trout.

Wildlife and Wildlife Habitat

Management Goal 1—*Facilitate the maintenance, restoration, and enhancement of bighorn sheep populations and habitat on public land. Pursue management in accordance with Oregon Department of Fish and Wildlife (ODFW) "Oregon's Bighorn Sheep Management Plan" in a manner consistent with the principles of multiple use management.*

Analysis of Impacts

Alternative A

Exploration, location, development, and production of energy minerals such as oil, gas, and geothermal is not likely to occur in bighorn sheep habitat because of the steep, rocky terrain. However, if any activity did occur, it would cause displacement of bighorn sheep from the localized area during operation periods.

Adverse impacts from exploration, development, and production of locatable minerals could occur on approximately 25,000 acres of bighorn sheep habitat that overlaps with moderate potential for occurrence of base and precious metals. This represents about 5 percent of bighorn habitat in the resource area. Loss or destruction of habitat could occur in the case of surface operations. After mine closure and or reclamation, bighorn sheep could reoccupy these areas providing the activities do not result in invasions of undesired vegetation or noxious weeds.

If Devils Garden is not designated wilderness, disposal of mineral material, building stone, and cinders in that area would impact bighorn sheep habitat.

Impacts from land acquisitions and disposals would be minimized by retaining land with quality bighorn sheep habitat. Impacts from authorizations of rights-of-way and permits for large-scale powerlines, fiberoptic cables, and pipelines could be significant if large areas of bighorn habitat were impacted. It is expected though, that these impacts would be kept to a minimum based on avoiding most bighorn sheep areas and retaining most bighorn habitat in Zone 1.

Protection, restoration, and enhancement of desirable vegetation communities would be beneficial to bighorn sheep habitat. Range improvements to increase forage would probably not occur in bighorn sheep habitat and would have minimal impacts to bighorn sheep.

Reduction and exclusion of natural fires across the landscape has lead to a dramatic increase of western juniper in bighorn sheep habitat. Historically, periodic fires removed invasive junipers and renewed bighorn sheep forage in these areas. No specific direction exists under current management plans for removal of juniper in bighorn sheep habitat. If current fire suppression activities were to continue, and invasive western juniper is left to increase, bighorn sheep habitat would be adversely affected. The forage base would decrease and cover to hide predators would increase. As western juniper cover increased, bighorn use would be concen-

trated in areas with less western juniper cover. Decreases of suitable habitat and excessive predation would cause declines in bighorn sheep populations.

Historic and current fire management activities can have dramatic positive and negative impacts on bighorn sheep populations and habitat depending on the scope, intensity, and timing of both prescribed and wildland fires. Suppression of wildland fires has lead to an increase in invasive western juniper throughout about half of the bighorn habitat on the LRA. Fire activities that allow for removal of invasive juniper and decadent forage have positive impacts to bighorn sheep. Negative impacts could occur if large catastrophic fires were to occur across an entire bighorn range within one season, leaving the resident bighorns in that area to either move to another location with better forage conditions or stay and starve.

Noxious weeds are a significant threat to almost all wildlife habitats, but currently do not pose a significant problem in bighorn sheep habitat. Continued efforts to control noxious weeds in these areas would be beneficial to bighorn sheep. Some limited disturbance for short periods would occur to bighorn sheep during weed control activities, but long-term benefits from these activities would be beneficial to bighorns.

By placing emphasis on specific habitat needs for individual species and on game species, management of vegetation within bighorn sheep habitat to provide for diverse self-sustaining communities of wildlife would have positive impacts to bighorns. Improvements in onsite wildlife water developments would also have beneficial impacts to wildlife.

Current livestock and wild horse management practices have minimal effects to bighorn sheep populations and habitat. This is mostly due to differences in habitat use. Overlap does exist between livestock, horses, and bighorns, especially during drought conditions when bighorns are more likely to venture further away from rimrock areas in search of water. Current livestock or wild horse numbers are not considered to be limiting factors on bighorn sheep populations. If this was to change within the life of the plan, changes in livestock allocations or wild horse numbers would be addressed on a case-by-case basis and adjustments would be made accordingly.

Maintaining a buffer of at least 9 miles between bighorn sheep and domestic sheep and goats would help to ensure that bighorns do not contact dieseases from these animals.

Current recreation activities have minimal effects on bighorn sheep and their habitat. Recreational viewing and very limited hunting of bighorn sheep does occur at several locations scattered throughout the LRA. These impacts are minimal and are not expected to dramatically increase over the life of the plan.

Alternative B

Impacts from energy and mineral exploration, location, production, and development in bighorn sheep habitat areas would be the similar to Alternative A. Negative impacts to bighorn sheep would result from increased human activity in the areas of the Devils Garden, Squaw Ridge, and Four Craters lava flows. Frequent human activities searching for cinders and decorative stone would cause bighorn sheep displacement and possible abandonment of habitats. Increased activity in the north end of Abert Lake ACEC could also cause increased negative impacts when compared to Alternative A.

Protection, restoration, and enhancement of desirable vegetation communities would be beneficial to bighorn sheep habitat, providing that enhancement activities where forage is optimized for livestock does not overlap with bighorn sheep range.

Reduction and exclusion of natural fires across the landscape has lead to a dramatic increase of western juniper in bighorn sheep habitat. Historically, periodic fires removed invasive junipers and renewed bighorn sheep forage in these areas. The treatment of 6,000 to 12,000 acres of invasive juniper on Lynch Rim (Fish Creek Rim) using a combination of prescribed fire and mechanical methods would benefit bighorn sheep. After treatment, the forage base for bighorn sheep would increase and cover to hide predators would decrease, thereby having a positive impact on bighorn sheep and their habitat. Bighorn populations on Lynch's Rim would be expected to increase after treatment of these areas.

Noxious weeds are a significant threat to almost all wildlife habitats, but currently do not pose a significant problem in bighorn sheep habitat. If efforts are shifted from controlling weeds in bighorn sheep habitats to control in other commodity-driven areas, then bighorn sheep habitat would suffer negative impacts. These impacts would probably be minor, unless major disturbances occurred and conditions were more suitable for noxious weeds.

By placing emphasis on specific habitat needs for individual species and on game species, management

of vegetation within bighorn sheep habitat would have positive impacts to bighorns. Improvements in onsite wildlife water developments would also have beneficial impacts to bighorn sheep.

Impacts from livestock management practices would be the same as in Alternative A.

Recreational viewing and very limited hunting of bighorn sheep would occur at several locations scattered throughout the LRA. These impacts are minimal and are not expected to dramatically increase over the life of the plan.

Increased fire response and full suppression in commodity areas would have both positive and negative impacts to bighorn sheep habitat. Fires in bighorn sheep habitat could have positive long-term benefits to bighorns by removal of invasive western juniper—these fires could also have negative impacts in the short term due to removal of forage.

Alternative C

Bighorn sheep would benefit from increased watershed function and improved watershed condition. Closing roads that are not needed would also benefit bighorn sheep where this occurred in bighorn habitat. Road closures could reduce access and thereby reduce human disturbance of bighorns.

Impacts from energy and mineral exploration and land acquisitions would be similar to those in Alternative A. Adverse impacts could result from loss or destruction of habitat during some operations, but impacts are expected to be kept to a minimum by avoiding bighorn sheep habitat.

Protection, restoration, and enhancement of desirable vegetation communities in this alternative would be beneficial to bighorn sheep habitat. Positive impacts would be expected to be minimal due to little or no overlap between bighorn sheep and nonnative seedings and grazing areas.

Active habitat restoration with a focus on bighorn sheep habitat by removal of invasive junipers and renewal of bighorn sheep forage along Lynch, south Warner, and south Abert Rims would have positive impacts to bighorn sheep. After treatment, the forage base for bighorn sheep would increase and cover to hide predators would decrease, thereby having a positive impact on bighorn sheep and their habitat. Bighorn populations within these areas would be expected to increase after treatment.

Increased control of noxious weeds would have positive benefits to bighorn sheep. Currently, noxious weeds occur in a few areas within the bighorn sheep range. At this time, many of these infestations are minor, but have potential given the right conditions to increase. Increased emphasis on edadicating noxious weeds would not dramatically increase bighorn sheep populations, but would provide better quality habitat.

Limiting OHV use to existing roads and trails across the resource area would result in less disturbance to bighorn sheep. Disturbance to bighorns from OHV's does occur in some areas, but is usually very limited due to the rugged nature of the habitat. Reduced disturbance from OHV's would result in minor positive impacts to bighorn sheep.

Recreational viewing and very limited hunting of bighorn sheep would occur at several locations scattered throughout the LRA. These impacts are minimal and are not expected to dramatically increase over the life of the plan.

Impacts from fire suppression activities would be similar to those in Alternative B. In extreme cases, impacts from wildland fire could alter bighorn habitat enough to have negative short-term impacts to habitat. Habitat could also be negatively impacted if repeated fire changed the habitat into annual exotic grasslands through invasive grasses like cheatgrass.

As a result of fuels reduction projects as outlined in the Fire Management section, potential fire size and severity would decline over the life of the plan.

Alternative D

Impacts from energy and mineral exploration, location, production, and development, and from land acquisitions, rights-of-way, and disposals would be the same as for Alternative C.

Impacts to bighorn sheep from management of western juniper would be the same as in Alternative C.

Impacts from noxious weed management, management of vegetation, livestock and wild horse management, and recreational activities would be the same as in Alternative A.

Impacts from OHV's would be lower than in Alternative A, due to closure of some roads along Abert Rim and in the Devils Garden lava flows. This would lead to increased habitat effectiveness for bighorn sheep.

Impacts from fire management activities and prescribed fires would be the same as in Alternative C.

Alternative E

Assumptions common to Alternative E: Wildland fire would be the major factor shaping wildlife habitats on the landscape. In most areas of bighorn sheep habitat, there would be no threats to human life or manmade structures and therefore wildland fires would not be suppressed. In dry years, large wildland fires would change the structure of most wildlife habitat. Within bighorn sheep habitat, wildland fires would remove some western juniper and would renew bighorn sheep forage. Some areas where exotic annual grasses occur, could be converted to annual grasslands. Burned areas would not be rehabilitated. Western juniper stands with a significant shrub understory remaining or with closed canopies would be removed by wildland fire. Western juniper stands without a shrub understory or closed canopy would be left on the landscape.

Impacts: Some negative impacts to bighorn sheep from wildland fire would occur in areas where significant annual grasses became established after fires. Positive impacts from fire would occur from juniper and shrub removal in bighorn sheep habitat. The amount of habitat available would increase over the long run from removal of invasive western juniper. Populations of bighorn sheep would be expected to increase slightly over the life of the plan.

Impacts from most noxious weeds would increase due to lack of control and increased spread rates after fires. With lack of noxious weed control and no active restoration after wildland fires, quality of bighorn sheep habitat is expected to decrease over the life of the plan.

No active restoration of bighorn sheep habitats would occur. Habitat quality and condition would be determined by natural processes.

Summary of Impacts

Under Alternative A, bighorn sheep habitat would continue to improve over time. Active management of invasive western juniper and noxious weeds would be the key to success. These activities would be considered through site-specific analysis on a case-by-case basis and would not be considered for bighorn sheep habitats as a whole across the resource area. The management goal for bighorn sheep would be met over the life of the plan.

Impacts for Alternative B would be similar to Alternative A, except that there would be more potential for human disturbance to bighorn sheep habitat from rock collectors and mineral exploration. If this disturbance was significant, displacement of bighorn sheep from these habitats would occur. This alternative also takes a more active approach to managing western juniper in some bighorn sheep habitats. If displacement of bighorn sheep occurs under this alternative, the management goal for bighorn sheep would not be met within these areas. The management goal would be met in areas where increase human activity does not take place.

Impacts from Alternatives C and D would be very similar. Each takes a more holistic approach to western juniper management in bighorn sheep habitat, outlining where management activities are expected to occur over the life of the plan. Both alternatives focus on active restoration of degraded habitats, but Alternative C would achieve the management goals slightly faster than with Alternative D. Neither of these alternatives would be effective without increased funding for restoration. The management goal would be met under this alternative, but timelines for meeting the management goal would be directly associated to the amount of funds that are available for restoration.

Wildfires would not be suppressed except to protect human life and property, and would likely burn more acres of bighorn habitat than under the other alternatives. No emphasis on restoration would have negative impacts to bighorn habitat if noxious weeds or exotic annual grasses become major problems within bighorn habitats. Management goals would be achieved under this alternative, but control over the speed and degree that they are achieved would rely solely on natural processes and could vary greatly.

Secondary, Indirect, and Cumulative Impacts

Historic cumulative impacts to bighorn sheep habitat were from overgrazing at the turn of the century. This degraded range condition allowed for invasion by cheatgrass and noxious weeds. Decades of fire suppression also allowed a slow invasion of western juniper in some areas of bighorn habitat. Without major disturbances in noxious weed areas, the spread of these would eventually stabilize, but disturbances in this landscape are inevitable. Alternatives that support noxious weed control, removal of juniper in a natural mosaic and restoration of bighorn habitats would reduce or remove these cumulative impacts. Management of bighorn sheep on the Hart Mountain Refuge would have an effect on adjacent BLM-administered

land. If populations increase on the refuge, sheep could move onto BLM-administered lands north and south of the refuge. Sufficient habitat quality would be needed to support additional animals.

Management Goal 2—*Manage big sagebrush cover to meet the life history requirements of sagebrush-dependent wildlife.*

Analysis of Impacts

Alternative A

Increased energy and mineral exploration would have negative impacts on sagebrush-dependent wildlife if these new sites occurred in sagebrush vegetation. These effects could be mitigated by avoiding areas, limiting surface disturbance, and limiting travel off existing roads. However, most impacts would require a long time to recover and a loss of habitat would result in the short term.

New rights-of-way or utility corridors, if located away from existing corridors and in native sagebrush habitat, would have negative impacts on sagebrush-dependent wildlife. New construction located near greater sage-grouse lek sites would cause habitat disturbance and create raptor perches—this could cause major negative effects and over time cause abandonment of the lek site due to increased predation or habitat changes.

Protection, restoration, and enhancement of desirable vegetation communities would be beneficial to sage-brush-dependent species on native sagebrush range, by increasing the quality of habitat. Maintaining large nonnative seedings and not allowing sagebrush to naturally reestablished these areas would have negative impacts to sagebrush-dependent species. Large seedings may act as a barrier to some sagebrush-dependent species, thereby reducing dispersal and movements from one habitat area to another.

Riparian areas are very important to many sagebrush-dependent species because most of them also spend a portion of their time in this habitat. Activities that restore or improve riparian vegetation and function would have positive impacts to sagebrush-dependent species. The degree of these impacts would be directly related to the degree of improvement in riparian vegetation and function.

Reducing the amount of young western juniper in areas where it has invaded sagebrush stands would have a positive impact to sagebrush-dependent wildlife provided that the area where juniper was removed is not invaded by nondesirable plant species or noxious weeds.

Providing for and restoring degraded and decadent shrublands would have a positive impact on sagebrush-dependent wildlife. As active management and restora-tion of these areas occurred, better habitat would be available for sagebrush-dependent wildlife.

Noxious weeds are a serious threat to all wildlife species, but especially to sagebrush-dependent species. Most efforts to control and eradicate noxious weeds would have positive impacts to sagebrush-dependent wildlife. The degree of these impacts would be directly related to the degree of decrease in noxious weeds and the degree of restoration that occurs after weed eradica-tion.

Current livestock and wild horse management practices can have some negative impacts to sagebrush-depen-dent wildlife. Excessive utilization in some areas can remove desirable grass and forbs that some sagebrush-dependent species require. These negative impacts can be minimized by adjustments in timing and duration of livestock use and by close monitoring of wild horse numbers within the herd management areas.

Historic and current fire management activities have had a dramatic impact on sagebrush-dependent wild-life. Suppression of wildland fires along with other factors has contributed to an increase in the density of sagebrush stands and a decrease in the grass and forb component within those stands. This has had a nega-tive impact on most sagebrush-dependent species. If current management trends continue without active sagebrush stand restoration, populations of many sagebrush-dependent species would continue to de-cline. Aggressive active fire suppression has been implemented in areas with high ecological integrity in order to protect remaining habitats important to sage-brush dependant species. Without this type of aggres-sive suppression, declines in sagebrush dependant species would be accelerated.

Alternative B

Impacts under Alternative B would be the same as under Alternative A, with the following differences.

Providing for and restoring degraded and decadent shrublands would have a positive impact on sagebrush-dependent wildlife. However, Alternatives B does not provide for active restoration and does not focus on sagebrush-dependent wildlife. Alternative B would have small negative impacts due to conflicts between

optimizing forage production and trying to restore native sagebrush communities. If an increase in forage production occurs on decadent and degraded native rangeland, the resulting decrease in grasses and forbs and increase in sagebrush density would have negative impacts on greater sage-grouse and other sagebrush-dependent wildlife species.

Alternative C

Increased emphasis on native plant species, and on reestablishing species diversity and structure in nonnative seedings, would increase both the quality and quantity of habitat available for sagebrush-dependent wildlife. If significant protection and restoration were to occur across the landscape, populations of sagebrush-dependent wildlife species would be expected to increase over the life of the plan.

Providing for and restoring degraded and decadent shrublands would have a positive impact on sagebrush-dependent wildlife. This alternative provides for active restoration with a focus on native species. This would have positive impacts to sagebrush-dependent wildlife.

Noxious weeds are a serious threat to all wildlife species, but especially to sagebrush-dependent species. Zero tolerance of noxious weeds under this alternative, if effective, would increase habitat quality for sagebrush-dependent wildlife species.

Increased emphasis on landscape management and ecosystem health, and less emphasis on commodity use, would have positive impacts to sagebrush-dependent wildlife by increasing the available habitat. Adjustments in timing and duration of livestock use and close monitoring of wild horse herds within the herd management areas would keep negative impacts to a minimum level.

Limiting OHV use to existing roads and trials across the resource area would result in less disturbance to sagebrush-dependent species. Most negative impacts to these species from OHV's is related to direct disturbance and typically occurs during spring nesting season. Some habitat modification could take place, but would be limited to a few specific areas. Reduced disturbance from OHV's would result in slight increases to these species.

Increased protection resulting from designation of new ACEC's/RNA's would have positive benefits to sagebrush-dependent wildlife species. Designation of these areas would result in slight increases in habitat quality and slight increases in populations of these species.

Historic and current fire management activities have had a dramatic impact on sagebrush-dependent wildlife. Suppression of wildland fires along with other factors has contributed to an increase in the density of sagebrush stands and a decrease in the grass and forbs component within those stands. This has had a negative impact on most sagebrush-dependent species. If current management trends continue without active sagebrush stand restoration, populations of many sagebrush-dependent species would continue to decline.

Increased emphasis on use of prescribed fire for restoration of degraded habitats could have negative impacts to sagebrush-dependent wildlife species if key habitats are burned. Treating habitats that are key to the survival of these species should be avoided if negative impacts are suspected to be the outcome.

All other impacts from activities under this alternative would be similar to those in Alternative A.

Alternative D

Impacts from energy and mineral exploration, rights-of-way, riparian area management, western juniper removal, fire suppression activities, and noxious weed management would have the same impacts as under Alternative A.

Impacts from protection, restoration, and enhancement of desirable vegetation communities would be similar to those in Alternative C. Actions to diversify the vegetative structure on nonnative seedings would benefit sagebrush-dependent wildlife.

Increased protection resulting from designation of new ACEC's/RNA's would be the same as in Alternative C.

Providing for and restoring degraded and decadent shrublands would have a positive impact on sagebrush-dependent wildlife. As active management and restoration of these areas occur, better habitat would be available for sagebrush-dependent wildlife.

Impacts from OHV use would be similar to those in Alternative A. Limiting OHV use to existing roads and trails on 275,463 acres in the northern end of the resource area (Map R-7) would decrease impacts to sagebrush-dependent species. This is expected to have positive impacts to sagebrush-dependent species. Most negative impacts to these species from OHV's is related to direct disturbance and typically occurs during spring nesting season. Some habitat modification can take place, but this is limited to a few given areas.

Reduced disturbance from OHV's would result in slight increases to these species.

Impacts from livestock and wild horse management would be the same as in Alternative A, except that additional herbaceous production would be left onsite for values other than forage production. This increase in residual grasses and forbs would benefit sagebrush-dependent species, but is not expected to cause dramatic positive impacts.

Alternative E

Assumptions common to Alternative E: Wildland fire would be the major factor shaping wildlife habitats on the landscape. In most areas of the sagebrush steppe, there would be no threats to human life or manmade structures and therefore wildland fires would not be suppressed. In dry years, large wildland fires would sweep over the landscape changing the structure of most wildlife habitat within the resource area from steppe to grassland. Sagebrush steppe that currently has a viable understory of native and nonnative perennial grasses and forbs would probably continue to have these perennial grasses onsite. Sagebrush steppe that currently has an understory of exotic annual grasses or no perennial grasses would most likely be converted to annual grasslands. Annual grasslands, once established, would require several years without fire to reestablish shrubs within the area. It is doubtful that shrubs could be reestablished on many of these sites without active restoration or rehabilitation after fire. Wildland fires would not receive active rehabilitation. Western juniper stands with a significant shrub understory remaining or with closed canopies would be removed by wildland fire. Western juniper stands without a sufficient shrub understory or closed canopies would be left on the landscape.

Impacts: Negative impacts to sagebrush-dependant wildlife from wildland fire would be significant. The amount of habitat available would decline over the long run. Without active restoration and rehabilitation after wildland fires, many habitats would most likely be converted to semipermanent annual grasslands. Populations of sagebrush-dependant wildlife would be expected to decline over the life of the plan.

Impacts from most noxious weeds would increase due to lack of control and increased spread rates after fires. With lack of noxious weed control and no active restoration after wildland fires, wildlife habitat is expected to decrease over the life of the plan.

Use of OHV's would be limited to existing roads and trails across the resource area. Impacts from OHV use on wildlife would be minimal.

No livestock grazing would be authorized across the resource area. Increased residual grasses and forbs would benefit sagebrush-dependant wildlife species. These populations would be expected to increase over the life of the plan except that impacts from fire or other natural processes would change habitats. No major negative impacts from management of forage production would occur to wildlife.

Impacts from wild horses would remain the same as in Alternative A. Some negative impacts to wildlife would be expected to occur, but these could be kept to a minimum by close monitoring of wild horse herds within the herd management areas for appropriate management levels and by gathering excess herd numbers on a regular basis.

Summary of Impacts

Under Alternative A, habitat for sagebrush-dependant species would continue to decline slowly over time. Identification, conservation, and aggressive fire suppression activities within remaining blocks of sagebrush steppe where ecological integrity in still high would offset this decline. Some restoration of degraded sagebrush steppe would occur under Alternative A, but this would not be the priority area of focus for restoration. Maintaining nonnative seedings to promote forage production would support the declining trend in sagebrush-dependant species. The management goal would be met over the life of the plan although no significant increases in sagebrush-dependant species or habitat is expected to occur.

Impacts from Alternative B would be similar to Alternative A, except that increased emphasis would be placed on commodity production. Restoration would also be focused in commodity production areas. Commodity production areas would receive fire suppression priorities over other resources. Sagebrush-dependant species would continue to decline over the life of the plan and this management goal would most likely not be met within the life of the plan.

Under Alternative C, remaining blocks of sagebrush steppe where ecological integrity in still high would be closely monitored and conserved. Restoration priorities would be given to those areas of sagebrush steppe that are in moderate to low ecological condition before declining natives grasses and forbs disappear from the site. Active restoration would move these areas back toward higher ecological integrity and offset the

decreasing trend. Close monitoring of grazing activities to allow for enough residual grasses to remain onsite would also offset the declining trends. Sagebrush-dependant species would increase over the life of the plan at a moderate rate. Alternative C would meet the management goal faster than all other alternatives.

Alternative D would have impacts very similar to Alternative C. Restoration of sagebrush steppe would still be a priority, but would be achieved at a slower rate than Alternative C. Neither Alternatives C or D would be effective without increased funding for restoration. The management goal would be met under this alternative, but timelines for meeting the management goal would be directly associated to the amount of funds that are available for restoration.

Alternative E would impact sagebrush-dependant species the most. If the assumptions under Alternative E are correct, wildland fire would remove a large proportion of the big sagebrush habitats from the planning area. No restoration would occur on lands burned by wildland fire. This would have dramatic negative impacts to these species. If this happens, it would take decades for most of these habitats to recover. Any sites with low ecological integrity and invasive annual grasses would require much longer to recover. This management goal would not be met under this alternative and sagebrush-dependant species would decline at much greater rates than they are currently declining under Alternative A.

Secondary, Indirect, and Cumulative Impacts

Historic cumulative impacts to sagebrush steppe habitats were from overgrazing at the turn of the century and decades of fire suppression. This coupled with the invasion of exotic species such as cheatgrass, has lead to a reduction in understory grasses and forbs and has left much of the remaining big sagebrush habitats in moderate to low ecological condition. Without major investments in restoration, these cumulative impacts would continue to keep most big sagebrush habitats in poor condition. Alternatives that support active management and restoration would increase habitat for sagebrush-dependant species.

Management Goal 3—*Manage upland habitats so that the forage, water, cover, structure, and security necessary for wildlife are available on public land.*

Analysis of Impacts

Alternative A

Energy and mineral exploration and new rights-of-way or utility corridors would have some negative impacts on wildlife habitat within localized areas. It is not expected that these impacts would preclude management of habitats over larger areas in order to provide all of the habitat components necessary for wildlife.

Protection, restoration, and enhancement of desirable vegetation communities would be beneficial to wildlife species where this occurred on native sagebrush range, by increasing the quality of habitat. Maintaining large nonnative seedings and not allowing sagebrush to naturally reestablish in these areas would have negative impacts to some wildlife species.

Management of commercial forest lands would only be considered for forest health or wildlife issues. These types of activities would have beneficial impacts to upland wildlife species.

Reducing the amount of invasive western juniper in some areas where it has invaded brush fields would have positive impacts to wildlife. When western juniper begins invading brush fields, the diversity of wildlife species, mostly small birds and mammals, increases. As juniper density continues to increase, the density of shrubs decreases, as does diversity of species using these sites. Eventually, shrub cover would be mostly removed from the site, thereby greatly decreasing species diversity. Managing these sites to provide a diversity of habitats, would provide positive impacts for a great number of wildlife species. Reducing the amount of invasive western juniper in bighorn sheep habitat would have positive impacts to bighorn sheep. Within these areas, removal of western juniper would provide increased forage and better landscape structure that bighorn sheep prefer.

Noxious weeds are a serious threat to all wildlife species. When noxious weeds invade quality wildlife habitat, forage, cover, and structure of habitats are negatively impacted. Any efforts to control and eradicate noxious weeds would have positive impacts to wildlife. The degree of these impacts would be directly related to the degree of decrease in noxious weeds and the degree of restoration that occurs after weed eradication.

Current livestock and wild horse management practices can have some negative impacts to wildlife by altering forage, cover, and/or structure of habitats directly or

indirectly. Excessive utilization in some areas can remove desirable grass and forb cover that some species require. These negative impacts can be minimized by adjustments in timing and duration of livestock use and by close monitoring of wild horse herds within the herd management areas for appropriate management levels.

Prescribed and wildland fires can have dramatic positive and negative impacts to wildlife habitat. These impacts depend greatly on the wildlife species being considered and on the intensity, duration, and timing of the fire activity. Impacts from prescribed fire would be considered on a case-by-case basis specific to each activity.

Current and historic suppression of wildland fires, along with other factors, has contributed to an increase in the density of sagebrush stands and a decrease in the grass and forb component within those stands. This has had a negative impact on many wildlife species. If current management trends continue without active sagebrush stand restoration, decreasing trends in quality of upland habitats would continue.

Alternative B

Increased energy and mineral exploration and development on the north end of Abert Lake would have significant negative impacts to wildlife. If sodium settling ponds were built within the guidelines of the mineral development scenarios (Appendix N2), wildlife would be displaced from 30 to 50 percent of the playa habitat on the north end of the lake. Supporting facilities such as a processing plant, powerlines, and pipelines would also cause increased negative impacts to wildlife through modification of habitat.

Impacts to wildlife from rights-of-way or utility corridors and noxious weeds would be the same as in Alternative A.

Impacts from protection, restoration, and enhancement of desirable vegetation communities would be the similar to Alternative A, but increased emphasis on desirable vegetation for commodity production would have negative impacts to wildlife species.

Reducing the amount of invasive western juniper in some areas would have similar impacts as Alternative A, but less emphasis would be placed on nongame wildlife species where increased commodity production could be attained. Reducing the amount of invasive western juniper in bighorn sheep habitat would occur on Lynch Rim and would have positive impacts to bighorn sheep. Within this area, removal of western juniper would provide increased forage and better landscape structure that bighorn sheep prefer.

Current livestock management practices would be similar to Alternative A, but would have increased negative impacts due to increased emphasis on commodity production.

Impacts from prescribed fire and wildland fire would be the same as in Alternative A. Impacts from prescribed fire would be considered on a case-by-case basis specific to each activity. Increased treatments of quaking aspen stands with fire to remove invasive western juniper would have positive impacts to wildlife species.

Alternative C

Impacts from energy and mineral exploration and new rights-of-way or utility corridors would be the same as those listed in Alternative A.

Protection, restoration, and enhancement of desirable vegetation communities would be beneficial to upland wildlife species. Increased emphasis on native plant species and on reestablishing species diversity and structure in nonnative seedings would increase both the quality and quantity of habitat available for these wildlife species. If significant protection and restoration were to occur across the landscape, then populations of these wildlife species would be expected to increase over the life of the plan.

Reducing the amount of invasive western juniper in some areas would have similar impacts as Alternative A, but increased emphasis would be placed on nongame wildlife species. Managing these sites to provide a diversity of habitats would provide positive impacts for a great number of wildlife species.

Zero tolerance for noxious weeds would benefit most wildlife species. If sufficient time and money allowed for a high degree of control of noxious weeds, increased habitat quality and quantity would result from this effort.

Increased emphasis on landscape management and ecosystem health and less emphasis on commodity use would have positive impacts to wildlife species by increasing the available habitat. Adjustments in timing and duration of livestock use and close monitoring of wild horse herds within the herd management area would keep negative impacts to a minimum level.

Limiting OHV use to existing roads and trials across the resource area would result in greater security to most wildlife species. Most negative impacts to these species from OHV's are related to direct disturbance. Some habitat modification can have taken place, but this is limited to a few given areas. Reduced disturbance from OHV's would result in slight increases to security and habitat effectiveness for these species.

Impacts from prescribed fire and wildland fire would be the same as in Alternative A. Impacts from prescribed fire would be considered on a case-by-case basis specific to each activity. Increased treatments of quaking aspen stands with fire to remove invasive western juniper would have positive impacts to wildlife species.

Alternative D

Impacts from energy and mineral exploration, new rights-of-way, management of commercial forest land, noxious weed management, and fire suppression would be the same as under Alternative A.

Protection, restoration, and enhancement of desirable vegetation communities would have similar impacts to those in Alternative A, except that actions to diversify composition of nonnative seedings would have positive impacts to wildlife species. Wildlife species diversity is expected to increase if vegetative species composition and structure are increased in nonnative seedings.

Impacts from reducing the amount of invasive western juniper would be the same as in Alternative C.

Impacts from livestock and wild horse management would be the same as in Alternative A, except that additional herbaceous production would be left onsite for values other than forage production. This increase in residual grasses and forbs would benefit sagebrush-dependent species, but is not expected to cause dramatic positive impacts.

Limiting OHV's to existing roads and trails on 275,463 acres in the northern end of the resource area would benefit upland habitats in this area (Map R-7).

Alternative E

Assumptions common to Alternative E: Wildland fire would be the major factor shaping wildlife habitats on the landscape. In most areas of the sagebrush steppe, there would be no threats to human life or manmade structures, and therefore, wildland fires would not be suppressed. In dry years, large stand-replacing wildland fires would change the structure of most wildlife habitat within the resource area from steppe to grassland, or in forested stands, shifting older forest stands to younger stands. Sagebrush steppe that currently has a viable understory of native and nonnative perennial grasses and forbs would probably continue to have these perennial grasses on site. Sagebrush steppe that currently has an understory of exotic annual grasses or no perennial grasses would most likely be converted to annual grasslands. Annual grasslands, once established, would require several years without fire to reestablish shrubs within the area. It is doubtful that shrubs could be reestablished on many of these sites without active restoration or rehabilitation after fire. Wildland fires would not receive active rehabilitation. Western juniper stands with a significant shrub understory remaining or with closed canopies would be removed by wildland fire. Western juniper stands without a sufficient shrub understory or closed canopies would be left on the landscape.

Analysis of Impacts: Impacts to wildlife from wildland fire would vary widely from species to species. Most BLM special status species would be negatively impacted from widespread wildland fire. Most of these populations would be expected to decline over the life of the plan. Wildlife species that prefer open grasslands would benefit from widespread wildland fire and their populations would be expected to increase over the life of the plan.

Impacts to juniper woodland wildlife would vary greatly from species to species, but wildlife diversity in these areas would be expected to decrease over the life of the plan. Areas with the most wildlife diversity would be the ones most likely consumed by fire due to the shrub component in these stands.

Impacts from most noxious weeds would increase due to lack of control and increased spread rates after fires. With lack of noxious weed control and no active restoration after wildland fires, wildlife habitat is expected to decrease over the life of the plan.

Use of OHV's would be limited to existing roads and trails across the resource area. Impacts from OHV use on wildlife would be minimal.

No management of commercial forest lands would occur. It is expected that wildland fires would open understories in ponderosa pine stands maintaining them in open conditions. No major negative impacts to wildlife would be expected to occur unless stand replacement fires removed large portions of forest.

No livestock grazing would be authorized across the resource area. Maximum forage would be available for wildlife uses. Wildlife populations would be expected to increase slightly over the life of the plan except that impacts from fire or other natural processes would change habitat. No major negative impacts from management of forage production would occur to wildlife.

Impacts from wild horses would remain the same as in Alternative A. Some negative impacts to wildlife would be expected to occur, but these could be kept to a minimum by close monitoring of wild horse herds within the herd management areas for appropriate management levels and by gathering excess heard numbers on a regular basis.

Summary of Impacts

Under Alternative A, habitats for wildlife will remain relatively static over time. Some habitats such as Wyoming big sagebrush will continue to decline, but others such as open grasslands will be created. This has mixed results from one wildlife species to another depending on the species. For the most part, under this alternative, restoration and management of wildlife habitats would only be considered on a case-by-case basis and not on the landscape level. The management goal would be met over the life of the plan although no significant increases or decreases would be expected to occur when considering wildlife as a whole.

Impacts from Alternative B would be similar to Alternative A, except that increased emphasis would be placed on commodity production. Restoration would also be focused in commodity production areas. Commodity production areas would receive fire suppression priorities over other resources. With increased emphasis on commodity production, some wildlife habitats will continue to decline. The management goal would be met within the life of the plan, but at a slower rate than under Alternative A.

Under Alternative C, remaining habitats that are important to priority wildlife species would be a primary area of focus. Restoration priorities would be given to those areas with important wildlife habitats. Close monitoring of grazing activities to allow for enough residual grasses to remain on site will also benefit wildlife habitats. Alternative C will meet the management goal faster than all other alternatives.

Alternative D would have impacts similar to alternatives A and C. Habitats that are important to priority wildlife species would still get priority, but would be achieved at a slower rate than Alternative C, but at a faster rate than Alternatives A and B. The management goal would be met under this alternative.

Alternative E will impact wildlife species the most. If the assumptions under Alternative E are correct, wildland fire will remove a large proportion of shrub habitats from the planning area. No restoration would occur on lands burned by wildland fire. This will have dramatic negative impacts to many priority wildlife species. If this happens, it would take decades for shrubs to reestablish in most of these habitats. Any sites with low ecological integrity and invasive annual grasses would require much longer to recover. This management goal will not be met under this alternative and many wildlife species will decline over the life of the plan.

Secondary, Indirect, and Cumulative Impacts

Activities that allow noxious weeds and invasive exotic plant species like cheatgrass to increase will continue to cause cumulative impacts to wildlife habitats. At any given moment in time, these impacts are not significant, until some type of large disturbance like wildland fire reduces competition with other species allowing invasive species to increase. Without active emphasis placed or restoring these degraded habitats, these cumulative impacts will continue.

Management Goal 4—*Manage forage production to support wildlife population levels identified by the Oregon Department of Fish and Wildlife (ODFW).*

Analysis of Impacts

Alternative A

The ODFW has set management objectives for most populations of game species that occur within the LRA. Current livestock numbers are not considered to be a limiting factor for these species. Some negative impacts do exist, but most can be minimized by adjustments in the timing, duration, and location of livestock grazing during critical times of the year when these wildlife species are present.

Current forage production on nonnative ranges has both positive and negative impacts to game species. Some desirable nonnative seedings, such as crested wheatgrass, provide habitat for pronghorn and mule deer at given times of the year. Depending on grazing season use and duration of use, these seedings could have both positive and negative impacts to these species. If large seedings overlap with crucial deer

winter range, negative impacts for deer would occur.

Alternative B

Increased emphasis on forage production and increased numbers of livestock could cause increased negative impacts to game species. Direct competition between game species and livestock for forage is expected to remain minor due to dietary differences between livestock and most game species. Adjustments in timing, duration, and location of livestock grazing would minimize other impacts to game species.

Increased control of invasive western juniper in order to increase forage production for livestock would probably have minor beneficial impacts to game species if spacial arrangement of juniper treatments were such that adequate security cover was left after treatment.

Minor positive impacts to game species would occur where increased emphasis on desirable vegetation was compatible with forage that game species would utilize. If desirable vegetation increased nonnative seedings, this would have both positive and negative impacts to wildlife depending on the species considered.

Alternative C

Increased emphasis on restoration and ecosystem health and less emphasis on commodity production would provide increased forage for game species. Direct competition between game species and livestock for forage is expected to remain minor due to dietary differences between livestock and most game species. Adjustments in timing, duration, and location of livestock grazing would minimize other impacts to game species.

Invasive western juniper would not be controlled in order to increase forage production for livestock, but could probably be removed in some areas for restoration of wildlife habitat. Removal of invasive juniper in this manner would have beneficial impacts to game species if spacial arrangement of juniper treatments were such that adequate security cover was left after treatment.

Increased emphasis on restoration and habitat diversity in nonnative seedings would have positive impacts to game species. These positive impacts to game species would occur where increased emphasis on desirable vegetation was compatible with forage that game species would utilize.

Alternative D

Impacts from current livestock management activities are the same as those in Alternative A.

Impacts from removal of invasive western juniper would be the same as in Alternative C.

Impacts from OHV use would be reduced on the northern end of the resource area where 275,463 acres would be limited to existing roads and trails (Map R-7). This would lead to greater security and habitat effectiveness for game species within this area.

Impacts from increased emphasis on restoration and habitat diversity would be the same as those in Alternative C.

Alternative E

No livestock grazing would be authorized across the resource area; therefore, no forage allocation would be necessary. Maximum forage would be available for wildlife uses. Wildlife populations would be expected to slightly increase over the life of the plan except that impacts from fire or other natural processes would change habitat. No major negative impacts from management of forage production would occur to wildlife.

Impacts from wild horses would remain the same as in Alternative A. Some negative impacts to wildlife would be expected to occur, but these could be kept to a minimum by close monitoring of wild horse numbers within the herd management areas and by gathering excess herd numbers on a regular basis.

Summary of Impacts

Under Alternatives A and B, habitats for game species will remain relatively static over time. Continued emphasis on single species management and on game species will ensure habitats for game species are maintained. Alternatives A and B will both meet the management goal, although Alternative A will achieve this somewhat faster than Alternative B.

Under Alternatives C and D, habitats for game species would also be maintained. Emphasis would be placed on both game and nongame species. Increased restoration efforts in areas that are important to wildlife species would also be a primary area of focus. Restoration priorities would be given to those areas with important wildlife habitats. Both Alternatives C and D will meet the management goal at about the same rate.

These will be slightly faster than Alternative A.

No major direct impacts from Alternative E would occur to game species.

Secondary, Indirect, and Cumulative Impacts

Under Alternative E, indirect impacts from natural processes would occur. If the assumptions under Alternative E are correct, wildland fire will remove a large proportion of shrub habitats from the planning area. No restoration would occur on lands burned by wildland fire. This will have dramatic negative impacts to many game species. If this happens, many sites with low ecological integrity and invasive annual grasses would develop into annual grasslands, decreasing the value of these lands for wildlife. This management goal will not be met under Alternative E and many game species would be expected to decline over the life of the plan.

Special Status Animal Species

Management Goal—*Manage public land to maintain, restore, or enhance populations and habitats of special status animal species. Priority for the application of management actions would be : (1) Federal endangered species, (2) Federal threatened species, (3) Federal proposed species, (4) Federal candidate species, (5) State listed species, (6) BLM sensitive species, (7) BLM assessment species, and (8) BLM tracking species. Manage in order to conserve or lead to the recovery of threatened or endangered (T&E) species.*

Analysis of Impacts

Alternative A

Actions that maintain/improve watershed conditions, improve ecological condition, improve vegetation cover and condition, manage nonnative seedings, manage forest and woodland areas, and manage livestock grazing would have benefits on special status animal species by increasing vegetation cover on uplands. Impacts would be minimal because improvement from these actions would be slow and incremental on a variety of sites scattered throughout the resource area. Some special status species may be negatively impacted due to an increase in vegetative cover.

Maintaining or improving watershed conditions would have a beneficial impact on all special status animal species and their habitat. Aquatic species would benefit directly from increased water yield. Increased summer flows would result in better fish survival. Satisfactory soil conditions would result in improved cover and reduce the erosion potential and improve spawning sediments by providing cleaner and better aerated gravels.

Maintaining or improving water quality, implementing the CWA, and complying with water quality standards established by the ODEQ would have a direct benefit to aquatic special status species. Cooler water temperatures would result in less stress to stream resident fish, thereby improving survival rates, especially for larger fish. Reduced sediment loads would improve spawning gravels.

Continuing existing grazing systems and exclosures on streams, springs, and riparian/wetland areas have led to improved special status animal species habitat, and the option is available to further adjust systems and modify or construct new exclosures to meet special status species objectives. However, objectives are defined primarily by proper functioning condition, so the level of improvement would be limited over setting objectives based on site potential and individual special status species habitat requirements. Within the range of Warner suckers, the grazing program has been covered by biological evaluations, and where effects may occur, they have been covered by a biological opinion. Effects on other species would need to be covered on a case-by-case basis accounting for individual species needs.

The long-term effects of wildland fires may be positive or negative on special status animal species habitat. If the fire results in increased perennial ground cover and better watershed conditions, it would have positive effects by improving watershed conditions. If the fire results in more annual cover or reduced cover it would have negative effects. All wildland fires would have a negative short-term impact on special status animal species habitat as a result of the removal of vegetation cover. Short-term effects from wildland fire in special status animal species habitat that are in proper functioning condition would be less adverse and functionally would respond quicker to revegetation and rehabilitation efforts. Special stipulations in the “Bald Eagle Management Area Cooperative Plan” focus on protection of bald eagle habitat through wildland fire suppression and prescribed burning projects to reduce fuel loading and the risk of catastrophic stand-replacement fires.

Effects of energy and mineral exploration, location,

development, and production on special status species and their habitat could vary from minimal with small-scale effects, to major if the exploration requires road development and disturbance in critical special status species habitats. Although all practical measures to maintain or restore special status species habitat are required of all mining operations, impacts to these resources would continue to occur in the form of localized surface disturbance over the short term. The effects would be similar for oil and gas leasing, geothermal energy, and solid mineral material sales. Laws, regulations, and policies minimize the negative effects from mineral activity on special status species.

Land tenure adjustments would have the potential to result in a wide range of positive and negative impacts to special status species and their habitat. Special status species habitat is considered to be of high value to the public and would be of priority for acquisition. Once under public ownership, special status species habitat would receive generally higher priority for enhancement resulting in better vegetation conditions. Law prohibits disposal of special status species habitat that may jeopardize the existence of or lead to actions to further list the species, so impacts from disposal actions would be minimal. Rights-of-way development around or through special status animal species habitat could have a negative impact on the functioning of these sites. Level of mitigation or avoidance would determine the level of effect. Most negative impacts would have limited or temporary impacts to the immediate vegetation. Rehabilitation following surface disturbance should restore this habitat to its functional state before disturbance. Acquiring access should cause minimal effects to special status species and their habitat; however, it could cause negative impacts due to increased visitation and disturbance during critical nesting and birthing periods.

Managing for proper functioning condition only as a minimum goal may limit further improvement towards site potential in riparian/wetland special status animal species habitat. Management to promote or maintain proper functioning condition on a minimum of 75 percent of the riparian/wetland areas would limit further improvements toward site potential in special status animal species habitat.

Implementation of specific restoration habitat projects in areas where conditions are not recovering naturally would benefit special status animal species.

Maintenance of spring developments could have positive effects on terrestrial special status animal species habitat by distributing use away from these areas and providing a semi-permanent water supply to these animals as well as vegetative habitat. Continued maintenance of spring developments would continue the restriction of riparian site development on several springs, and lack of functioning of the spring system in the watershed. Potential aquatic special status species, such as spring snails, could be negatively affected by the continued maintenance.

Forest management in the form of commercial and precommercial thinning, partial cut, sanitation and salvage sales, and prescribed burning and wildland fire could have negative impacts to special status animal species habitat. By improving forest health, watershed conditions could be improved, thus having a beneficial effect on special status animal species dependent upon riparian, wetland, or aquatic habitat. All forest health projects would comply with special conservation plans or biological evaluations for the species.

Juniper management could have positive effects on special status animal species habitat. By improving ground cover, watershed conditions could be improved, thus having a beneficial effect special status species habitat. Juniper removal and prescribed burn projects would have a positive effect on maintaining and enhancing quaking aspen stands for riparian special status animal species. Juniper-dependent special status species could be negatively affected over the short term by stand management.

Control of weeds would improve or maintain watershed conditions which would result in a positive effect to special status species habitat.

Managing sagebrush cover in seedings and on native rangeland to meet the life history requirements of sagebrush-dependent wildlife species could have a positive effect on special status species utilizing sagebrush habitat by maintaining or improving watershed conditions in the uplands.

Managing for proper functioning condition riparian/wetland conditions that consider structure, forage, and other riparian habitat elements important to game and nongame wildlife species could have positive effects to special status species and their habitat and associated riparian/wetland dependant species. Riparian/wetland foraging, nesting, and parturition habitat would improve.

Riparian/wetland acquisition would increase public land acreage and benefit riparian/wetland dependant sensitive species.

Limiting playa and lakebed developments would limit the current proper functioning condition condition of wetland special status species habitat. Some of the current lakebed developments have changed water and vegetative conditions onsite or broke the water-holding seal and allowed water to travel offsite. This has had a negative effect on special status species as well as other wildlife populations by limiting the distribution, abundance, and diversity of forbs found on the lakebed.

Implementation and maintenance of the Warner Wetlands and Abert Lake ACEC plans would maintain or enhance the current level of proper functioning condition in these two areas and allow the few areas not currently in proper functioning condition to approach this condition. This would maintain or enhance riparian/wetland special status species habitat.

Continuing the Cabin Lake Mule Deer Winter Range Cooperative Road Closure could have a positive effect on special status species habitat by limiting offroad travel during a period when soils are saturated and potential for erosion is greatest. Managing motorized vehicles in accordance with existing open designations would continue to cause negative effects on special status species and their habitat on a site-specific basis, since OHV's can travel crosscountry off existing roads in all open areas.

There has not been any systematic inventories or habitat monitoring of populations and distributions of special status animal species within the resource area, with the exception of the Warner sucker. Impacts to special status species would be minimal and site-specific environmental analysis and mitigation would be used to minimize or eliminate loss of Warner sucker critical spawning habitat, raptor nesting or roosting sites, or parturition areas. The only current recovery plans for special status species are for bald eagles, peregrine falcons, and the Warner sucker and associated threatened and rare native fishes of the Warner Basin. These plans positively affect other special status species.

Authorization of temporary nonrenewable grazing use precludes excess vegetation from being left for ground cover, litter development, and further enhancement of watershed conditions, and ground nesting wildlife species.

Wild horses use the herd management areas year-round and impact heavy use areas negatively (especially the springs in the Beaty Butte area). Confining horses to herd management areas and appropriate management levels reduces damage to sites outside these areas.

Keeping horses inside the herd management areas cause negative impacts to special status species using the area; however, indirectly benefit sensitive species occurring outside these areas. Effects on special status species due to water development project implementation would need to be determined on a case-by-case basis, but generally new developments would concentrate wild horse use and could have a negative effect on special status species. Fences and other management structures could have a beneficial effect by controlling use away from critical sensitive species use areas or have a negative effect by concentrating use within critical areas.

Current management of Warner Wetlands Special Recreation Management Area and the remaining public land as extensive recreation management area could cause negative impacts to special status species and their habitat. Effects would occur on a site-specific basis. Increased public use could have a negative effect while controlling public use could have a positive effect. Expansion of existing and development of new recreation sites could have a negative effect on special status species habitat. Project design or avoidance could minimize or eliminate impacts.

Retaining existing WSA's could have a positive effect on protecting special status species and their habitat; however, 1995 "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP) may preclude some management actions such as vegetation manipulation or structural project work that would be beneficial.

Managing public lands to provide social and economic benefits to local residents, businesses, visitors, and future generations could have potential future impacts to special status species and their habitat and would need to be determined on a case-by-case, site-specific basis. Current recreation developments are minimal and have minimal impact to special status species. Protection of ACEC's with special status species habitat values would have beneficial impacts.

Ground disturbing wildland fire control activities including line construction, aerial retardant application, and engine access can have negative impacts to special status species habitat. Effects would need to be determined on a case-by-case basis and mitigated or eliminated where possible through the use of the fire management plan.

Rehabilitating burned areas to mitigate the adverse effects of wildland fire on soil and vegetation in a cost-effective manner, and to minimize the possibility of

wildland fire recurrence or invasion of weeds, would have a positive effect on riparian/wetland vegetation and would be beneficial by reducing soil loss and sediment production. However, benefits may be limited since emergency fire rehabilitation activities are implemented on a case-by-case basis following wildland fire and a separate environmental assessment is completed for each emergency fire rehabilitation project.

Prescribed fire can be an effective tool at increasing ground cover and releasing quaking aspen stands from competition with invasive species and would be beneficial to special status species. At the current level of prescribed fire activity (10,000 to 20,000 acres per year for the resource area) impacts to special status species are minimal and short term. This level, however, may be inadequate to meet the upland vegetation requirements to return to a natural fire cycle. Some sites would continue to decline in ground cover with or without prescribed fire and may require revegetation.

Alternative B

Maintenance and improvement of watershed and associated soil conditions, water quality, livestock grazing management, suppression of wildland fires, managing riparian wetland areas for proper functioning condition, and maintaining spring developments would have the same impacts as under Alternative A.

Land tenure adjustments, rights-of-way development, and acquisition of public access would have the same impacts as Alternative A.

New road construction would have a greater potential for impacting watershed health under this alternative, and therefore have a negative impact on special status species and their habitat. The level of effect could be minimized by following road construction and rehabilitation standards.

Actions to maintain/improve watershed conditions, improve ecological condition, improve vegetation cover and condition, manage nonnative seedings, manage forest and woodland areas, and manage livestock grazing would be similar to that described under Alternative A.

Implementation of riparian/wetland restoration projects would benefit riparian/wetland vegetation and special status species and their habitat.

Continued adjustment of livestock management in riparian/wetland habitat used by special status species would be beneficial limited to the goals and objectives of the management action and associated biological evaluation or conservation plan.

Road maintenance in special status animal species habitat could have a negative impact to the species, which could be mitigated by design modification or relocating the roads out of the area. It is anticipated that more road maintenance affecting sensitive species and their habitat would be completed under this alternative.

Juniper management would have more positive and negative effects on special status species and their habitat than Alternative A, since up to 75 percent of early- to mid-successional stands of juniper would be treated for watershed improvement, big game range enhancement, and bighorn sheep habitat enhancement. The negative effects of this more aggressive juniper management would probably be short term and could be mitigated with the specific special status species habitat requirements in mind.

Quaking aspen stand management direction to treat all stands within the life of the plan would greatly improve quaking aspen stand condition and maintain those stands that are currently functioning. There may be minimal short-term impacts to riparian dependent special status and other species; however, the long-term benefits of stand health would outweigh the minimal short-term impacts imposed. Quaking aspen management would be designed to protect known sensitive species nesting and parturition sites.

Allowing playa and lakebed developments could degrade the current proper functioning condition condition of wetlands and would have a negative impact to wetland conditions and sensitive wetland-dependent wildlife species.

Managing upland habitats so that the forage, water, cover, structure, and security necessary for wildlife are available on public land would not negatively effect special status species.

Continuing the Cabin Lake Mule Deer Winter Range Cooperative Road Closure could have a positive effect on special status species and their habitat by limiting offroad travel during a period when soils are saturated and potential for erosion is greatest. Managing motorized vehicles with emphasis on open OHV use designation and maximizing opportunities for organized OHV events could cause more negative impacts to special status species and their habitat than Alternative A.

Mitigative measures on BLM-authorized projects

would eliminate or reduce impacts to special status species utilizing riparian/wetland habitats.

Increasing domestic livestock grazing authorization by 11,657 AUM's could impact special status species and their habitat depending on where the increased use would occur. Further impacts that could directly impact special status species are reinstatement of suspended nonuse and further increases to full licensed preference in areas currently below active preference. Maximizing authorization of temporary nonrenewable grazing use could further preclude opportunities to enhance other resource values as described in Alternative A.

Wild horse management impacts would be similar to Alternative A, but could cumulatively impact special status species and their habitat more if the increase of domestic livestock grazing authorization use occurs in the same area as the wild horse use.

Impacts from optimizing the management of Warner Wetlands Special Recreation Management Area and expanding management of existing developed and undeveloped recreation sites could be greater to special status species and their habitat than Alternative A due to increased visitor use to the area.

Social and economic impacts would be similar to Alternative A; however, impacts could be intensified with emphasis on commodity production and public use.

Prescribed fire impacts could increase with the three-fold increase of prescribed fire activity proposed, thereby impacting special status species and their habitat even more.

The effects on special status species and their habitat from the energy and mineral program would be greatest under this alternative that emphasizes commodity production. Although all practical measures to maintain or restore special status species habitat are required of all mining operations, impacts to these resources would continue to occur in the form of localized surface disturbance over the short term.

Alternative C

Impacts to special status animal species from dust and smoke created from construction or prescribed burn projects would be the same as Alternative A, even though the acre limit for prescribed fires and wildland fires would increase from 20,000 to 640,000 acres per year.

Grazing use authorization would be reduced from 108,234 to 86,587 AUM's while emphasizing resource values, consistent with resource objectives. Grazing impacts would be less from those found in Alternative A as long as minimum standards for ecosystem health are met. Reduced livestock grazing would increase the buildup of fine fuels and possibly lead to the loss of more acres of sagebrush which could have a negative impact on sagebrush-dependent special status species over the short term.

Impacts from wildland fires could be greater under this alternative than Alternative A. With the increased limit of 640,000 acres burned annually and the possible designation of areas for wildland fire use, there is a potential for loss of more special status species habitat depending on where the fires occur. Prescribed fires could be designed to mitigate or eliminate losses, and crucial habitat could be identified prior to the designation of new wildland fire use areas. Most special status species habitat loss would occur naturally from wildland fire and would create a short-term impact. Emergency fire rehabilitation would continue to occur.

The effects on special status species and their habitat from the energy and mineral program would be assumed to be less under this alternative that emphasizes protection of natural values and closes certain areas to mineral entry or extraction than either Alternative A or B.

Land tenure adjustments, rights-of-way development, and acquisition of public access would have the same impacts as Alternative A. Impacts from disposal of public land would be less than the other two alternatives since only 8,000 acres would be available for disposal as opposed to 42,500 acres in Alternative A, and 54,800 acres in Alternative B.

New road construction would have a lesser potential for impacting watershed health under this alternative and therefore have a minimal impacts on special status species and their habitat. The level of effect could be minimized by following road construction and rehabilitation standards and adherence to resource objectives.

Improving ecological conditions and restoration in the uplands after a prescribed or wildland fire would have the same beneficial impacts on special status animal species habitat as Alternative A by maximizing vegetative production and protecting upland function, thereby contributing to the continued health of special status animal species habitat. Minimum standards for ecosystem health would be followed and seed mixes would be limited to native perennial species only.

Restoration of nonnative seedings to diversify structure and composition would have beneficial impacts on shrub-dependent special status species and their habitat.

Rehabilitation of spring developments would have positive effects on special status animal species by returning all flow to the original channel as long as livestock were excluded from these areas.

Exclusion of livestock in riparian/wetland habitats would be beneficial to special status animal species using these habitats.

The removal of all roads within riparian/wetland areas and all other roads within the resource area not required by law would positively impact special status species and eliminate the need to perform future maintenance.

Western juniper, old growth, and snag management would have the same impacts to special status species as Alternative B.

Quaking aspen stand management would have the same effects on special status species and their habitat as Alternative B.

Noxious weed management would have the greatest beneficial impacts to special status species and their habitats by eradication of all weeds within the resource area.

Bighorn sheep management would have the same effects on special status species as Alternative B.

Eliminating new playa and lakebed developments and rehabilitating nonfunctioning sites would benefit special status species and their habitats and return the sites to proper functioning condition.

Implementation and maintenance of the Warner Wetlands and Abert Lake ACEC plans would have the same effect as Alternative A.

Managing upland habitats so that the forage, water, cover, structure, and security necessary for game and nongame wildlife species would positively benefit special status species.

Managing livestock forage production to support the increase of 8,390 additional wildlife AUM's identified by the ODFW would have a minimal impact on special status wildlife species and their habitat; however, this alternative would highlight the need to consider the importance of all wildlife species. There is a potential for future impacts from expansion of the Lake County elk herd but this would be on a site-specific basis.

Mitigative measures on BLM-authorized projects would eliminate or reduce impacts to special status species utilizing riparian/wetland habitats.

Reducing domestic livestock grazing authorization by 21,647 AUM's could benefit special status species and their habitat depending on where the decreased use would occur. Eliminating authorization of temporary nonrenewable grazing use, and abandonment and rehabilitation of rangeland projects could also benefit special status species if adequate water is available for use.

Managing the existing Warner Wetlands Special Recreation Management Area and emphasizing undeveloped, dispersed recreation opportunities in North Lake County Special Recreation Management Area would benefit special status species and their habitat.

Managing motorized vehicles with emphasis on limited OHV use designation and authorizing organized events to existing roads and trails would benefit special status species and their habitat.

Managing public land actions and activities in a manner consistent with VRM class objectives would have the same impacts on special status species and their habitat as Alternative A.

Social and economic impacts would be similar to Alternative A.

Alternative D

Maintenance or improvement of watershed and associated soil conditions, water quality, managing riparian/wetland areas for proper functioning condition, forest management, special status plant species managment, management of Warner Wetlands and Lake Abert ACEC's and other SMA designations, and wild horse management would have the same impacts as Alternative A.

Grazing impacts would be the same as those found in Alternative A as long as minimum standards for ecosystem health are met while maintaining resource values for multiple use and sustainability.

Impacts from suppression of wildland fires could be greater under this alternative than Alternative A. With the increased limit of 480,000 acres burned annually

with prescribed and wildland fire and the possible designation of areas for wildland fire use, there is a potential for loss of more special status species habitat depending on where the fires occur. Prescribed fires could be designed to mitigate or eliminate losses, and crucial habitat could be identified prior to the designation of new wildland fire use areas. Most habitat loss would occur naturally from wildland fire and would create a short-term impact. Emergency fire rehabilitation would continue to occur to meet resource objectives.

The effects would be similar for oil and gas leasing, geothermal energy, and solid mineral material sales. The effects on special status species and their habitat from the energy and mineral program would be assumed to be similar to effects under Alternatives A and B due to the designation of new rights-of-way avoidance/exclusion area within new ACEC's.

Land tenure adjustments, rights-of-way development, and acquisition of public access would have the same impacts as Alternative A. Impacts from disposal of public land would be less than the other two alternatives since only 8,000 acres would be available for disposal as opposed to 42,500 acres in Alternative A and 54,800 acres in Alternative B.

New road construction would have similar impacts to watershed health as Alternative C. The level of effect could be minimized by following road construction and rehabilitation standards and adherence to resource objectives and BMP's.

Improving ecological conditions and restoration in the uplands after a prescribed or wildland fire would have the same beneficial impacts on special status animal species habitat as Alternative A by maximizing vegetative production and protecting upland function, thereby contributing to the continued health of special status animal species habitat. Minimum standards for ecosystem health would be followed; however, nonnative perennials may be used.

Restoration of nonnative seedings to diversify structure and composition would have beneficial impacts on shrub-dependent special status species and their habitat.

Mandatory deferment of livestock grazing for 2 years minimum after wildland fire or prescribed fire conducted in upland areas would have the same effects on special status species and their habitat as Alternative A.

Implementation of riparian/wetland restoration projects would have the same effect on special status species and their habitat.

Rehabilitation of spring developments would have the same effects on special status animal species as Alternative B by improving riparian function.

Implementation and maintenance of livestock grazing systems in riparian/wetland habitats would be beneficial to special status animal species using these habitats by promoting the recovery or maintenance of riparian systems to desired range of conditions based on site potential.

The removal of any roads within riparian conservation area impacting the stream and/or riparian zone would positively impact special status species and could reduce the need to perform future maintenance.

Western juniper, old growth, and snag management would have the same impacts to special status species as Alternative B.

Quaking aspen stand management would have the same effects on special status species and their habitat as Alternative B.

Noxious weed management would have a greater beneficial impact on special status species and their habitats than Alternative A by increasing emphasis on restoration.

Managing sagebrush cover in seedings and on native rangeland to meet the life history requirements of sagebrush-dependent wildlife species would have the same effects on special status species and their habitats as Alternative A.

Eliminating new playa and lakebed developments and rehabilitating nonfunctioning sites would benefit special status species and their habitats and return the sites to proper functioning condition.

Managing upland habitats so that the forage, water, cover, structure, and security necessary for game and nongame wildlife species would positively benefit special status species.

Managing livestock forage production to support the increase of 8,390 additional wildlife AUM's identified by the ODFW would have a minimal impact on special status wildlife species and their habitat; however, this alternative would highlight the need to consider the importance of all wildlife species. There is a potential for future impacts from expansion of the Lake County

elk herd but this would be on a site-specific basis.

Continuing the Cabin Lake Mule Deer Winter Range Cooperative Road Closure could have the same effect on special status species and their habitat as Alternative A.

Maintenance and restoration in fish and aquatic habitat would have the same effects as Alternative A. Mitigative measures on BLM-authorized projects would eliminate or reduce impacts to special status species utilizing riparian/wetland habitats.

Continuing the current domestic livestock grazing authorization of 108,234 AUM's would have the same impacts on special status species and their habitat as Alternative A. Temporary nonrenewable grazing use and construction of rangeland projects would not be authorized if there were negative impacts to special status species.

The impacts from the cultural and paleontological resources would be similar to Alternative A.

Managing existing Warner Wetlands Special Recreation Management Area and North Lake County Special Recreation Management Area would have similar impacts as Alternative B.

Managing motorized vehicles with emphasis on open OHV use designation and authorizing organized OHV events to existing roads and trails would have the same impacts as Alternative A.

Managing public land actions and activities in a manner consistent with VRM class objectives would have the same impacts on special status species and their habitat as Alternative A.

Alternative E

There could be some negative effects to forest-dependent special status species without timber management, especially forest health projects. Habitats could be lost from fir and juniper encroachment or unuseable to certain special status species.

There would be minimal effects on special status species from grazing management under this alternative. Species dependent upon grazing or some other disturbance may be impacted by this alternative. The lack of grazing would allow the buildup of fine fuels and increase the risk of large catastrophic wildland fires, which would have a negative impact on special status species and their habitat over the short term.

Impacts from suppression of wildland fires would be the greatest under this alternative. The appropriate management response would emphasize initial attack, full suppression only to protect human life and Federal, state, or private property. Large tracts of crucial wildlife and special status species habitat could be burned and unuseable for the life of this plan.

The effects on special status species from the energy and mineral program would be least under this alternative with only authorizing energy and mineral actions required by law.

New road construction would have the least potential for impacting special status species habitat under this alternative. Only roads required by law would be constructed. The level of effect could be minimized further by following road construction and rehabilitation standards and adherence to resource objectives, BMP's, and recovery/conservation plans.

The impacts from wildland fire would have the greatest negative impact on special status species and their habitat. No emergency fire rehabilitation would be completed following a wildland fire. Future conditions of special status species habitat would allow natural processes to define vegetation composition across the landscape and no restoration would be conducted.

Natural processes would be allowed to define vegetation composition in existing nonnative seedings and site rehabilitation would not be conducted under this alternative. The lack of diversity, structure, and composition would have negative impacts on shrub-dependent special status species and their habitat without emphasis on natural values and other resource objectives.

Spring developments would be removed under this alternative unless needed for wildlife or wild horses. Springs may need to be maintained or rehabilitated if critical to special status species. Overall, the impacts to special status species would be minimal from spring management.

Road maintenance would not occur under this alternative. Those roads negatively affecting special status species habitat would continue to cause impacts and other roads within the areas would have the potential for causing negative effects in the future without regular maintenance.

Natural processes would regulate western juniper, old growth, and snag management under this alternative. Juniper expansion would continue causing negative

impacts to special status species and their habitat. Natural processes would also regulate quaking aspen stands under this alternative and juniper would be allowed to replace stands and negatively effect quaking aspen dependent special status species.

Special status plant species would not be managed under this alternative except for federally listed species as specified in recovery plans. This action would have a minimal effect on special status animal species.

Noxious weed management would focus only on high priority areas to protect adjacent private property and could have negative impacts on special status species habitats currently infested or occupied in the future under this alternative.

Bighorn sheep would be allowed to disburse naturally and could cause negative effects on other special status species if concentration occurs.

No riparian or wetland acquisition or disposal would occur under this alternative and would negatively effect the potential for increase of riparian/wetland-dependent special status species habitat in public ownership.

Restoration of playa and lakebed habitats would not occur under this alternative and would negatively effect currently nonfunctioning riparian/wetland areas used by special status species.

Full implementation and maintenance of the Warner Wetlands and Abert Lake ACEC plans would not occur under this alternative, and would cause negative impacts to riparian/wetland-dependent special status species from erosion and flooding.

There would be no management of upland habitats (rangeland improvements) to provide forage, water, cover, structure, and security necessary for game and nongame wildlife species, which could cause negative effects on special status species due to concentrated wildlife use.

Continuing the Cabin Lake Mule Deer Winter Range Cooperative Road Closure would have the same effect on special status species as Alternative A.

Maintenance and restoration would not occur in fish and aquatic habitat and could cause negative impacts to riparian/wetland special status species under this alternative.

Mitigative measures would be used on all BLM-authorized projects to eliminate or reduce the minimal impacts to special status species habitat. BLM-authorized projects would be limited to those required by law and wild horse survival.

The abandonment of all rangeland projects could negatively impact special status species by concentrating wildlife use or eliminating available water.

Wild horses could cause negative impacts to special status species and their habitat if horse concentration occurs.

Special management area designation would not continue and could cause negative impacts to special status species in areas previously designated as closed or limited OHV use.

Managing motorized vehicles with emphasis on limited and closed OHV use designation and not authorizing organized OHV events would have the same effects on special status species and their habitat as Alternative C.

Managing public land actions and activities in a manner consistent with VRM class objectives would have the same impacts on special status species as Alternative A.

Social and economic uses would cause the least impact to special status species, since no commodity production would be allowed from public land.

Summary of Impacts

Under Alternative A, special status animal species habitat would continue to improve, although recovery rates and extent of recovery would be reduced to allow for commodity uses, including livestock, transportation, and recreation. Management would continue on a case-by-case basis on a site-specific level with less consideration for watershed-scale effects. The major impacts to special status species are from wildland fire (short-term impact) and the lack of an aggressive juniper/quaking aspen, and weed management program (long-term impact). The management goal for special status species and their habitat could be achieved under this alternative with the exception of quaking aspen management and the continuing encroachment of juniper into these stands. Without immediate treatment, some quaking aspen stands could be lost forever, negatively affecting quaking aspen-dependent special status species. Wetland areas could also be taken over with noxious weeds if more effective chemicals are not developed and approved. This could have a serious effect on wetland-dependent special status wildlife species.

Impacts from Alternative B would be the similar to Alternative A. Because of law and policy ("Endangered Species Act" and CWA, etc.) setting a high minimum standard, the difference in effects would be less than would occur without these laws. Generally, minimally acceptable conditions would be required and mitigation would occur on a case-by-case basis rather than on a watershed scale. While improvements would occur, they would take longer and not be as extensive as would occur under Alternative A. The management goal for special status wildlife species could be achieved under this alternative, although at a much slower rate (longer than the life of this plan) due to the emphasis on commodity production and public uses. Juniper and quaking aspen management would be more aggressive under this alternative than Alternative A, and would have a beneficial impact on those species dependent on quaking aspen and potential negative impacts to species dependent on juniper habitats. Quaking aspen and juniper projects would be designed to minimize or eliminate impacts to special status wildlife species. Noxious weed management would emphasize protection of commodity resources as opposed to watershed resources and could have a severe negative effect on special status wildlife species and their habitat.

Impacts from Alternative C would be much less than under Alternatives A or B. Recovery rates would be much faster, resulting in better special status wildlife species habitat conditions. Considering watershed-scale effects at the levels specified in Alternative C would result in more stable conditions. With emphasis on protection and restoration of natural values, the management goal for special status wildlife species could be achieved under this alternative. This alternative has the most aggressive weed, juniper, and quaking aspen management strategies of Alternatives A and B, which would be implemented resource area wide. Alternative C also has the most aggressive prescribed burning and wildland fire use management program which could cause greater short-term impacts to special status wildlife species and their habitat. With an aggressive emergency fire rehabilitation program the long-term impacts from prescribed and wildland fire activities could restore marginal special status species habitat.

Impacts from Alternative D would be similar to Alternative C; however, recovery rates for special status wildlife species habitat would require more time to improve. Slower recovery rates would be caused by less stringent direction to restore watershed function and processes, so there would be less improvement to specific special status wildlife species habitat. More consideration is given to watershed-scale effects than under Alternatives A and B. The management goal for special status wildlife species and their habitat could be achieved under this alternative.

Impacts from Alternative E would be similar to Alternative D; however, without disturbance from permitted activities and active restoration, marginal special status wildlife species habitats may never reach their full potential and currently occupied habitats could become unusable. Watershed-scale effects would progress toward natural recovery of uplands, but increased juniper encroachment would continue to degrade watershed-level effects on riparian/wetland-dependent special status wildlife species habitat. By allowing natural processes to determine the outcome of habitat conditions for special status wildlife species, the management goal for special status wildlife species and their associated habitat may never be achieved under this alternative.

Secondary, Indirect, and Cumulative Impacts

The major secondary, indirect, or cumulative impacts to special status wildlife species is habitat loss, destruction, conversion to less marginal habitat, and loss of connectivity. The impacts from activities implemented on the adjacent USFS- and USFWS-administered lands, as well as private and state lands, creates additional cumulative impacts to BLM-authorized actions. Hart Mountain National Antelope Refuge utilizes prescribed burning and juniper cutting to meet the management objectives in their comprehensive management plan.

The cumulative effects of treating this amount of juniper and sagebrush in combination with BLM's proposed alternatives could have major impacts to special status species utilizing these habitats. Private landowners and the USFS are also treating juniper and sagebrush habitats, although at a reduced amount. Future treatments would have to be closely coordinated with other Federal and state agencies, and private landowners to provide optimal habitat and connectivity for sensitive wildlife species. Coordination would also be required with other Federal and state agencies in fire planning to highlight and protect crucial sensitive wildlife species habitats and corridors. All future BLM authorized juniper and sagebrush manipulation projects would be designed to minimize or eliminate impacts to special status wildlife species and consider the cumulative impacts from other non-BLM projects that may effect special status wildlife species and their habitat. Timber management on adjacent Fremont National Forest lands would have minimal effect on special

status species if the "Bald Eagle Cooperative Managment Plan" is followed.

Livestock Grazing Management

Management Goal—*Provide for a sustainable level of livestock grazing consistent with other resource objectives and public land-use allocations.*

Assumptions

The management of livestock grazing would have an impact on the vigor and reproduction of key plant species. Actions which enhance plant species vigor and reproduction cause an increase in the number and size of that species in a plant community. Conversely, if the action adversely affects a plant's vigor and reproduction, the species affected would decrease in number and size in a plant community. Any change in the size or number of a species would be known as a change in the composition. For the purpose of analysis it is assumed that all available nutrients and water are essentially fully utilized by the present vegetation. Therefore, any change in the amount of one species would result in an opposite change in the amount of some other herbaceous species. Significant changes in species composition reflect changes in other vegetative characteristics such as production, range condition and trend, ground cover, and T&E plants.

The three components of livestock grazing that impact vegetation are vegetation allocation, grazing systems, and range improvements. The vegetation allocation across allotments was determined in the "Lakeview Grazing Management Environmental Impact Statement" using 50 percent utilization as the standard, except in the crested wheatgrass seedings where 65 percent utilization was the standard. The vegetation allocation is adjusted following monitoring and allotment evaluation and S&G's assessments which are conducted on each allotment. The vegetation allocation is set so the impacts from utilization are similar across allotments. However, the time and duration of the utilization, which is determined by the grazing system and the range improvements, has a significant impact on the vegetation.

Table 4-1 shows how key species composition would be generally impacted by each grazing system under each alternative. The key species composition is also an indicator of plant cover, plant production, plant vigor, reproduction, and litter cover. The grazing systems are described in detail in Appendix E2, which also contains a detailed description of grazing impacts on vegetation communities within the resource area.

Analysis of Impacts

Alternative A

Management of plant communities under Alternative A would likely maintain or increase the quality and quantity of forage available to livestock. Rehabilitated areas would be excluded from grazing for 2 years after the project. This forage loss would be short term and rehabilitation projects would likely increase the quantity and quality of forage available. Changes in grazing systems and seasons of use may be used to promote or maintain proper functioning condition.

Maintenance and improvement of watershed function and the continuation of existing grazing systems and exclosures would have several impacts to livestock grazing. Water sources for livestock have the potential for longer-lasting impacts, assuming animals have access to the areas. Forage in exclosures would remain unavailable to livestock and decrease livestock distribution. This would result in a quantity and quality forage decrease. Impacts from the management of fish and aquatic habitat would be similar to those stated above.

Most management actions for wildlife, wildlife habitat, and special status animal species under Alternative A would have little impact to the current livestock grazing program. The potential for changes in grazing systems and seasons of use would remain. However, most necessary changes to livestock management have been taken and no major future actions are anticipated.

Livestock grazing management would remain a sustained yield of 108,234 AUM's annually. Based on past land use plans, there is potential to construct 62 additional miles of pipeline, 37 reservoirs, and 32 waterholes. Approximately 10,000 acres that were proposed to be treated and seeded in the resource area have not been completed to date. These remaining rangeland improvement projects in addition to temporary nonrenewable grazing use would make additional forage available to livestock. Management of wild horses would have no impact to livestock grazing.

The management of ACEC's, WSA's, WSR-eligible streams, and caves would not change from the current management actions. The impacts to current livestock grazing may include loss of forage through changes in grazing systems and seasons. Most major changes to

livestock grazing management are already being implemented.

Use of prescribed fire and rehabilitation of the treated areas could result in an increase in forage quality and quantity available to livestock. Fire treatment areas would have a decrease in forage available for livestock use in the short term, requiring changes in livestock grazing use. Short-term impacts of emergency fire rehabilitation include grazing exclusion following the rehabilitation. There is potential for an increase in forage quality and quantity available to livestock in the long term.

At the current levels of recreational use in the area, there would be no impact to livestock grazing. Any designated open OHV use has the potential to decrease forage availability. There is a potential for loss in animal condition if OHV use is in the vicinity of livestock and causes stress to the animals.

Historically, land exchanges and acquisitions have not had an impact on the forage available to livestock. However, any acquisition or exchange of lands has the potential to increase or decrease the forage available to livestock. Under Alternative A, 42,500 acres of land would be made available for disposal. These lands are present in seven allotments and make up a substantial part of 6 allotments. Two of these six allotments would have the potential of being completely disposed, resulting in a loss of availability of 1,485 AUM's. Land acquisition may include lands that would have forage available for livestock. This has the potential to increase the forage available to livestock grazing.

Alternative B

Management of plant communities under Alternative B would likely increase the available forage to livestock. Forage production would be increased through restoration of existing nonnative seedings, and decadent, disturbed, and degraded sites. Allowing access to rehabilitated areas prior to two growing seasons, if consistent with management objectives, may increase forage availability. Springs and water developments would be managed to allow riparian function while providing livestock watering access, increasing potential distribution and available forage. Restoration of riparian/wetland areas would be done in a manner that does not impact livestock grazing. Impacts to livestock grazing from the management of special status plant species under Alternative B would be similar to those under Alternative A. Increased inventory and detection of noxious weeds to protect commodity resources, and an increase in public education, would likely increase or maintain current levels of forage available to livestock.

Under Alternative B, most impacts to livestock grazing, if management for water resources and quality, and fish and aquatic habitat is implemented, would be similar to impacts under Alterative A. Corridor fencing of all streams would decrease the available forage to livestock. This would occur through direct loss of forage and a decrease in the potential distribution of animals.

Most management actions for wildlife, wildlife habitat, and special status animal species under Alternative B would be similar to the impacts from Alternative A. Reestablishment of big sagebrush habitat on seedings could decrease the forage available to livestock.

Livestock grazing management would increase the sustained yield from the current level of 108,234 to 119,057 AUM's annually—a gain of 10,823 AUM's of forage. These additional AUM's combined with temporary nonrenewable grazing use authorized in years of favorable growing conditions, and the use of range improvement projects to meet resource objective needs, would result in an increase in forage available to livestock grazing. Wild horse management under Alternative B would have no impact to livestock grazing.

ACEC's, WSR's, and caves would be managed similar to the current strategies resulting in impacts that are similar to those discussed in Alternative A.

Alternative B would result in a combination 64,000 acres of prescribed burn treatments and wildland fires allowed annually. The compliance with air quality standards under each alternative would result in no impact to livestock grazing. Use of prescribed fire and rehabilitation of the treated areas to optimize the forage base would result in an increase in forage quality and quantity available to livestock. Fire treatment areas would have a decrease in forage available for livestock use in the short term, requiring changes in livestock grazing use. Short term-impacts of emergency fire rehabilitation include grazing exclusion following rehabilitation. There would potentially be an increase in forage quality and quantity available to livestock.

Development of recreational opportunities and OHV use may decrease forage available to livestock. There is a greater potential for loss in animal condition with all the resource area being open to OHV use and an increased potential for stress to the animals.

Historically, land exchanges and acquisitions have not

had an impact on the forage available to livestock. However, any acquisition or exchange of lands has the potential to increase or decrease the forage available to livestock. Under Alternative B, land that would facilitate commodity production would be emphasized for acquisition. This has the potential to increase the forage available to livestock grazing. Disposal would include land within 14 allotments. One of these allotments would lose most of its land mass and result in the unavailability of 1,970 AUM's to livestock.

Alternative C

Permanent closure of an additional 50,497 acres (compared to Alternatives A, B, and D) to grazing in order to emphasize natural values in plant communities would directly decrease the availability of forage for livestock. Indirectly, a decrease in the development of range improvements would likely result in decreased livestock distribution and a loss of forage available to livestock. The reestablishment of native species in areas where nonnative species of high forage value currently exist, as well as the permanent or temporary closures associated with these projects, may result in a decrease of forage available to livestock. If the areas that would be rehabilitated to native species currently contain species of little or no value to livestock, and the areas would eventually be reopened to grazing, there would likely be an increase in forage available to livestock. Native seeding would still result in more forage available to livestock than if no rehabilitation was conducted. There may be an increase in time an area is excluded from grazing following rehabilitation, however this would be short term and would not ultimately effect available forage. Depending on the type of treatment of quaking aspen stands, changes in livestock grazing use may be required. Increased amount and quality of forage may be available for livestock use after treatments have been applied. By increasing the inventory and detection of weeds and eradicating and restoring all existing sites, there would be an increase in available forage. Expanding public education efforts would be beneficial to livestock through a decrease in weed spread and introduction. This increased forage availability could potentially lead to more allocation of forage to livestock, or an increase in forage quality, allowing better condition and health of the animals.

The impacts to livestock grazing in regards to special status plant species would be applicable to a broader area in Alternative C than in either Alternatives A or B. The decrease in available forage would likely be greater in the amount of forage, length of time areas may be closed to grazing, and the size of areas closed to grazing. This would also be true for the 10 areas that are proposed to be designated as ONHP ACEC/RNA's. Grazing would be excluded from five of these areas resulting in a decrease in forage available to livestock.

The protection and restoration of watershed function and processes, and meeting the surface and groundwater water quality standards, would impact livestock grazing in several ways. Initially, management efforts to attain these goals may require changes in the frequency, intensity, and season of livestock use. Animals may have limited access to water, decreasing livestock distribution and indirectly decreasing forage availability. The long-term impacts may include improved animal health due to improved range condition, the opportunity to increase livestock numbers in rehabilitated areas, continued changes in forage available to livestock, and increases in water availability due to improved watershed health. Exclusion of grazing from all streams, springs, riparian areas, wetlands and their associated riparian conservation area would result in a direct decrease to forage available for livestock. Indirectly, loss of access to water sources may limit distribution in areas where grazing can continue and ultimately decrease forage availability. The exclusion of livestock from all riparian areas would directly decrease the quantity and quality of forage available by making the forage in those areas inaccessible to the animals. This loss may be more significant in quality of forage than quantity.

Providing for aquatic habitat may result in adjustments to livestock grazing use and potentially require changes in frequency, intensity, and season of use. Grazing systems and livestock exclusion necessary to manage for instream processes and habitat diversity, state water quality standards for fish or other aquatic beneficial uses, proper functioning condition, riparian potential and riparian management objectives would potentially result in one or a combination of the following: changes in frequency, intensity, and season of livestock use; decreased or increase forage availability for livestock; and/or increase water availability for livestock. Closures to grazing would result in a permanent loss of forage available to livestock. If stream habitat goals and objectives are not being met, livestock grazing use may be adjusted in appropriate areas of concern. Implementing BMP's to limit sediment loading in streams would improve water quality and water availability to livestock. If wetlands acquired are a continuation of wetlands and riparian areas present in adjacent BLM land, water availability to livestock has the potential to increase and persist. Opening existing riparian exclosures to livestock grazing would increase the available forage for livestock use. Distribution of

livestock would be improved with more rangeland available for livestock use.

Reestablishment of native big sagebrush wildlife habitat could decrease the available forage for livestock grazing on native rangeland or seedings, depending on current conditions. Grazing systems and livestock exclusion necessary to manage for desired future habitat conditions would potentially result in one or a combination of the following: changes in frequency, intensity, and season of livestock use; and changes in forage availability for livestock. There would be no potential to increase available forage if there is no development of new water sources. This could also impact the quality and quantity of current available forage by limiting the opportunity to increase livestock distribution in an area.

Management of upland wildlife habitat would potentially require changes in frequency, intensity, and season of use. Depending on the desired condition, forage available to livestock could increase or decrease. Adjustments to livestock grazing use in 46 allotments containing pronghorn winter forage and 81 allotments containing mule deer winter forage are possible. If management includes exclusion of grazing, there could be a loss of forage availability. Ultimately, a loss in forage for livestock during specific seasons would occur—most likely a decrease in fall use. This would have minimal impact as there are few permits currently issued for fall grazing. There would be no authorization of domestic sheep grazing resulting in a complete loss of forage availability for that species. This would not impact the current forage available to livestock grazing as all permits are currently for cattle.

The allocation of additional forage for elk, deer, and bighorn sheep, and the readjustment of total AUM's in allotments with mule deer and pronghorn habitat, would have no effect on the current AUM's allocated to livestock grazing. Livestock grazing would be implemented to incorporate the management of special status animal species and corresponding habitats and to incorporate the "Recovery Plan for the Threatened and Rare Native Fishes of the Warner Basin and Alkali Subbasin." Potential impacts would be changes to current livestock grazing intensity, frequency, and season of use. The impacts from management of wildlife under Alternative C would result in broader impacts to livestock grazing than those from Alternatives A and B because of the emphasis on landscape-scale resolution in Alternative C.

Livestock grazing management would lower the annual sustained yield from the current level of 108,234 to 86,587 AUM's, a loss of 21,647 AUM's of forage. By not authorizing temporary nonrenewable grazing use, there would be no additional AUM's available for livestock above those licensed. Indirectly, the abandonment of projects would decrease the available forage for livestock by decreasing the ability to promote the distribution necessary to utilize forage in specific areas. Restoration activities to plant communities in the Paisley Desert Herd Management Area would increase forage available for livestock grazing; however, the forage allocated for livestock would probably reflect the current allocation. Any additional water developments constructed for horses would aid in the distribution of livestock, depending on placement. The abandonment of established water developments and other projects that do not emphasize natural values would reduce the water available to livestock, decreasing distribution opportunities and available forage.

A total of seven ACEC's would be closed to grazing and create a loss of 11,011 AUM's of forage available to livestock on 96,171 acres. The Devils Garden Allotment would no longer be available for emergency livestock grazing. In order to incorporate the management of eligible WSR's, livestock grazing use would potentially require changes in frequency, intensity, and season of use, and may be limited in certain areas, resulting in a loss of forage available to livestock. Limiting OHV events to existing roads and trails, and not designating any acres to open OHV use, would prevent the potential decrease in forage availability and would decrease the probability of animal condition loss due to animal stress that may occur under other alternatives. Visual resource management would have no impact on forage available to livestock.

Limiting land-disturbing activities within identified Native American religious sites or traditional cultural properties may include closure of areas to grazing. This would decrease the forage available to livestock, potentially resulting in a reduction of AUM's. Management of cultural plants would potentially require changes in frequency, intensity and season of use of livestock grazing, also resulting in reduced available forage and AUM's. There is also a potential for decreasing the quality of forage available to livestock.

Under Alternative C, the amount of acres available for prescribed fires and the subsequent rehabilitation of these areas would result in the greatest potential increase in forage quality and quantity available to livestock in areas not excluded to grazing. Fire treatment and wildland fire areas would have a decrease in forage available for livestock use in the short term,

requiring changes in livestock grazing use. Short-term impacts of emergency fire rehabilitation include grazing exclusion following the rehabilitation. The length of time an area would be closed to grazing may be increased under Alternative C, depending on individual site conditions found during monitoring. The decrease in forage availability would still be temporary. In the long term, vegetation may return with improved species diversity and increased forage quantity and quality available for livestock grazing. The emphasis on natural landscapes and processes in Alternative C could potentially provide less forage available to livestock than the practice of using nonnative and native/nonnative seed mixtures as outlined in Alternatives A, B, and D. However, this is site dependent, and ultimately, any rehabilitation would increase favorable site conditions following a fire, and may provide more forage than is currently available in degraded and senescent plant communities.

Any expansion or development of recreation sites that exist within grazing allotments has the potential to decrease the forage available for livestock use.

Acquisition of lands with emphasis on land with high public resource values may increase or decrease the forage available for livestock grazing, depending on the public values at the time. Historically, land exchanges and acquisitions have not had an impact on the forage available to livestock. Nineteen allotments include land that has been marked for disposal under Alternative C. Significant forage loss is unlikely due to the fact that the total amount of land that may be disposed is minimal in each allotment. Reduction in commodity use to increase the level of protection for natural values would likely have a direct impact to livestock in the form of reduced forage availability. By establishing new commodity use levels meant to establish stability to the local livestock industry, there may be an initial loss in forage availability that could result in higher probability of forage available to livestock in the future.

Alternative D

Changes in grazing management to attain a trend toward the desired range of conditions in the upland native shrub steppe communities may decrease the forage available to livestock in the short term. These management changes should benefit livestock grazing in areas that currently contain invasive and undesirable plant species. Although the management of nonnative seeding to maintain seeding production, improve structural and species diversity, and maintain forage production may not change the current quantity of forage available for livestock, it may make the current amount of forage available to livestock persist for a longer period of time. The long-term impact of rehabilitation efforts in areas that include annual, weedy, invasive woody, and decadent species is an increase in the forage available to livestock. These efforts would result in short-term forage loss due to changes in grazing management immediately after the projects. Using a mixture of native and nonnative seeds for rehabilitation would result in more forage available to livestock than if no seeding was done. However, the amount of increase would depend on the success of the rehabilitation. Riparian and wetland vegetation management may include management actions that exclude grazing or change the grazing system and season of use, both short and long term, to promote the recovery of riparian systems. Continuing the current integrated management of noxious weed species while expanding efforts to inventory and detect new infestations, would benefit livestock by decreasing the opportunity for undesirable species to displace quality forage. The impacts to livestock grazing in regards to special status plant species would be similar to the impacts in Alternative C.

Impacts to livestock grazing with implemented water resource/watershed health management under Alternative D would be similar to those in Alternative C. Exceptions include six allotments in the resource area that currently have stream reaches determined to be functioning-at-risk or nonfunctioning. These allotments would be impacted in the short term by excluding grazing for 5 years, decreasing the quality and quantity of forage available to livestock. If the previous grazing system is determined to be a contributing factor to the undesirable condition, changes would be incorporated into the grazing system to promote riparian recovery. The long-term impacts may include improved animal health due to improved range condition, the opportunity to increase livestock numbers in rehabilitated areas, continued changes in forage available to livestock, decreases in forage availability depending on the grazing system changes, and increases in water availability due to improved watershed health. Management for fish and aquatic habitat under Alternative D may require changes in grazing management including decreases in the quantity and quality of forage available to livestock grazing due to changes in grazing systems, including exclosures.

Bighorn sheep management and the allocation of an additional 8,390 AUM's to wildlife would not have an impact on livestock grazing. These additional AUM's are currently unalloted for any specific use. Management of upland habitat would have impacts similar to

those outlined in Alternative C. Current livestock grazing management would potentially require changes in frequency, intensity, and season of use to incorporate management of upland wildlife habitat. Resulting impacts include a decrease in forage available to livestock and the exclusion of grazing in specific areas. Adjustment to livestock grazing use in 46 allotments containing pronghorn winter forage and 81 allotments containing mule deer winter forage are possible. Ultimately, a loss in forage for livestock during specific seasons would occur, most likely a decrease in fall use. This would be minimal as there is currently not a large amount of fall livestock use in the resource area. The allocation of additional forage for elk, deer, and bighorn sheep, and the readjustment of AUM's in deer and pronghorn allotments, would have no effect on the current AUM's allocated to livestock grazing.

Most impacts to livestock grazing due to management of special status animals species under Alternative D would be similar to those from Alternative A. Under Alternative D, management would emphasize landscape-level resolution rather than single species resulting in some impacts similar to Alternative C. Any impacts to livestock grazing would be broader than those from Alternatives A and B because of the emphasis on landscape scale resolution.

Under Alternative D, the current authorization of 108,234 AUM's would continue. Administrative solutions to meet resource management needs would not effect the quantity of forage available to livestock. Although temporary nonrenewable grazing use would be authorized, there may not be as much forage available to livestock as in Alternative A. Additional herbaceous production may be retained for values other than forage production. Increasing the gather cycle for wild horses and the subsequent increases of the appropriate management level by 40 horses may effect forage available to livestock in the Sheeprock and Christmas Lake Allotments. Horse numbers have exceeded this appropriate management level in the recent past and any impact to livestock grazing through this increase would be minimal.

The Devils Garden Allotment would no longer be available for emergency livestock grazing, reducing AUM's available to livestock. Closure of the Arrow Gap Allotment to grazing would result in a loss of 160 AUM's to livestock. In order to incorporate the management of eligible WSR's, livestock grazing use would potentially require changes in frequency, intensity, and season of use, and may be limited in certain areas resulting in a loss of forage available to livestock. Impacts from SMA's proposed under Alternative D are similar to those in Alternative C. WSA and cave management under Alternative D would have the same impacts as Alternative A.

Impacts to livestock grazing by proposed cultural and paleontological resource management under Alternative D would be similar to the impacts from Alternative C.

Reduction in commodity use to increase the level of protection for natural values would likely have a direct impact to livestock in the form of reduced forage availability. By establishing new commodity use levels, meant to establish stability to the local livestock industry, there may be an initial loss in forage availability that could result in an increase in the future forage available to livestock.

In areas not excluded to grazing, wildland fires and prescribed fires followed by rehabilitation would result in an increase in forage available to livestock. Short-term impacts of emergency fire rehabilitation include grazing exclusion following the rehabilitation. In the long term, vegetation may return with improved species diversity and increased forage available for livestock grazing. Fire treatment areas would have a decrease in forage available for livestock use in the short term requiring changes in livestock grazing use. In the long term, these same fire treatment areas would have an increase in quantity and quality of forage available for livestock use.

Although there would still be no OHV events outside existing and/or designated roads and trails, there would be 2,038,044 acres designated open to OHV's under this alternative, creating a higher potential to decrease forage through OHV use and increase loss of animal condition due to stress. Any expansion or development of recreation sites that exist within grazing allotments has the potential to decrease the forage available for livestock use. Livestock grazing use would potentially require changes in frequency, intensity, and season of use, and may be limited in these recreation areas.

Historically, land exchanges and acquisitions have not had an impact on the forage available to livestock. Nineteen allotments include land that has been marked for disposal under Alternative D. Significant forage loss is unlikely, due to the fact that the total amount of land that may be disposed is minimal in each allotment. However, any acquisition or exchange of lands has the potential to increase or decrease the forage available to livestock.

Alternative E

The impact to livestock grazing under Alternative E would be a complete loss of forage available to livestock. Livestock grazing permits authorizing an average 108,234 AUM's annually would be canceled. No rangeland projects in support of livestock grazing would be planned or implemented. Rangeland projects that support livestock grazing only and are not needed for other purposes would be abandoned and rehabilitated.

Summary of Impacts

Alternative A would allow the management goal for livestock grazing to be met. Management practices outlined under this alternative would support the S&G's. If livestock are the causative agent in nonattainment of a standard, then corrective actions would be taken. Management actions that could result in reductions in forage available to livestock and loss of management flexibility, as well as management actions that could increase forage and retain management flexibility, are present under this alternative. The actions proposed would generally allow for grazing management flexibility. Permitted AUM's would remain the same as currently permitted under the present management. Impacts to livestock grazing would be minimal under Alternative A, with the potential to slightly increase or decrease forage availability.

Alternative B would allow the management goal for livestock grazing to be met. Management practices outlined under this alternative would support the S&G's. If livestock are the causative agent in nonattainment of a standard, corrective actions would be taken. Management actions that could result in reductions in forage available to livestock and loss of management flexibility, as well as management actions that could increase forage and retain management flexibility, are present under this alternative. The actions proposed would generally allow for grazing management flexibility. Permitted AUM's would reflect a 20 percent increase from those permitted under the present management. Impacts to livestock grazing would be minimal under Alternative B, with the potential to increase forage availability due to the emphasis on commodity production.

Alternative C would allow the management goal for livestock grazing to be met. Management practices outlined under this alternative would support the S&G's. If livestock are the causative agent in nonattainment of a standard, then actions would be taken. Management actions that could result in reductions in forage available to livestock and loss of management flexibility, as well as management actions that could increase forage and retain management flexibility, would occur. The actions proposed would generally allow for grazing management flexibility. Permitted AUM's would reflect a 20 percent decrease from those permitted under the present management. Impacts to livestock grazing under Alternative C would likely be more apparent and longer lasting than the impacts from Alternatives A and B. This is due to the actions under Alternative C emphasizing natural values and processes over commodity production. Although this emphasis can be achieved with grazing continuing in the resource area, there would be more constraints on this use and a loss of forage available to livestock.

Alternative D would allow the management goal for livestock grazing to be met. Management practices outlined under this alternative would support the S&G's. If livestock are the causative agent in nonattainment of a standard, then actions would be taken. Management actions that could result in reductions in forage available to livestock and loss of management flexibility, as well as management actions that could increase forage and retain management flexibility, would occur. The actions proposed would generally allow for grazing management flexibility. Impacts to livestock grazing under Alternative D would likely be more apparent and longer lasting than the impacts from Alternatives A and B, but not as drastic as those in Alternatives C and E. This is due to the actions under Alternative D protecting and improving natural values while providing commodity production.

Implementation of Alternative E would eliminate livestock grazing on public lands in the planning area, and thus, would have the most detrimental impact to livestock grazing of all the alternatives. The management goal for livestock grazing would not be met.

Cumulative, Indirect, and Secondary Impacts

Although impacts to livestock from any individual management action under Alternative A are negligible, there is potential for actions to have a greater impact when considered cumulatively. It is anticipated that the recreational use of public lands in the resource area would continue to increase. There is potential for impacts to livestock grazing, and loss of forage, if individual users have conflicts with the livestock or resource damage increases with the recreational use. Livestock grazing in areas with heavy recreational use may need to be modified. Presently, management of elk and bighorn sheep does not impact livestock grazing.

Future management of greater sage-grouse habitat may include actions that impact livestock grazing. Any changes to the management of wildlife species by the ODFW may result in the need to change grazing systems and seasons of use. When combined, management of OHV use, mineral development, cultural, paleontological, and land disposal may decrease the available forage for livestock if multiple actions were taking place in the same allotment.

Under Alternative B, impacts to livestock grazing would generally increase the forage available to livestock. Increased opportunity for prescribed fire to optimize the forage base, and rehabilitation using high forage value species, would increase the forage available to livestock. These efforts, combined with rangeland improvements, would promote use of currently unavailable or undesirable areas. Commodity production in this alternative includes actions that would impact livestock grazing in situations where other commodities are emphasized. Where other commodity-based resources are present, cumulative impacts may result in a loss of forage. Presently, management of elk and bighorn sheep does not impact livestock grazing. Any changes to the management of wildlife species by the ODFW may result in the need to change grazing systems and seasons of use. Future management of greater sage-grouse habitat may include actions that impact livestock grazing. When combined, management of recreation, OHV use, mineral development, cultural, paleontological, and land disposal may decrease the available forage for livestock if multiple actions were taking place in the same allotment.

The cumulative impacts to grazing under Alternative C could be significant. Allotments that have the most potential of being impacted are those where grazing is the causative agent in nonattainment of S&G's or any other standards set by resource professionals for multiple resources. These areas may contain special status plants and wildlife, aquatic habitat, wildlife habitat, streams, riparian areas, and recreational opportunities, and are in need of rehabilitation. Impacts would be greater if management activities require complete livestock exclusion and/or loss of present forage base. Closure of an area to recreation use may increase recreation use in other areas. This may result in decreased forage availability and use conflicts.

Under Alternative D, impacts to livestock grazing would generally not affect the total AUM's available to livestock. In a case-by-case basis, there may be cumulative impacts to the forage selection and quality of forage. Management actions that include wildlife such as greater sage-grouse, elk, and bighorn sheep, combined with other resource issues in an area, may decrease the forage available to livestock. Any closure to recreation in one area may not directly impact livestock grazing. Indirectly, use in other areas may increase and impact forage availability for livestock.

Under Alternative E, livestock grazing would be eliminated from the resource area. As a result, there would be no secondary, indirect, or cumulative impacts to the program.

Wild Horses

Management Goal—*Maintain and manage wild horse herds in established herd management areas at appropriate management levels to ensure a thriving natural ecological balance between wild horse populations, wildlife, livestock, vegetation resources, and other resource values*.

Assumptions

All wild horses removed from the herds would be placed in BLM's adoption program or otherwise placed for long-term care. Under Alternative B, increases in livestock grazing would not result in improper rangeland management. Therefore, more intensive grazing systems and range improvement projects would be required under this alternative.

Analysis of Impacts

Alternative A

The watershed health goals benefit wild horses by providing a stable or increased forage production and availability. Existing grazing systems and exclosures on streams, springs, and riparian/wetland areas benefit wild horses in the long term, when improved health of streams, springs, and riparian/wetlands provide a longer time period of water availability and improved forage production and availability.

Construction of new boundary fences or strengthening existing fences would encourage horses to stay inside herd management areas.

Fencing designed for watershed restoration, fire rehabilitation, range improvement, livestock management, or protection of special status species temporarily restricts movement of wild horses until they become accustomed to the change. During drought years, fences may prevent horses from reaching water

sources, and actions, such as leaving gates open and water hauling, may be necessary to maintain the herds. Fencing affects the entire Paisley Desert Herd Management Area, which has approximately 46 miles of interior fencing. Grazing allotments within the boundaries of the herd management area include Allotments 418, 419, 428, and 10103. Fencing is less of an impact to the Beaty Butte Herd Management Area which has only 9 miles of interior fencing in one allotment (600). The fencing in the Beaty Butte Herd Management Area is constructed so that horses may move around the fence on the east side. No further interior fencing is expected in either herd management area under this alternative.

Aggressive initial attack and full suppression of wildland fires would minimize short-term impacts to horses, such as loss of forage and habitat associated with wildland fire. Prescribed fire would reduce availability of forage and habitat on 9,000 acres in the Beaty Butte Herd Management Area in the short term until vegetation recovers from direct fire impacts. In the long term, vegetative productivity of herbaceous species and diversity of plant species may be maintained or increased with prescribed fire. An increase in herbaceous vegetation would benefit wild horses by increasing the available forage. Prescribed fire or wildland fire in the Paisley Desert Herd Management Area could reduce the amount of forage available in both the short and long term due to the risk of invasion from cheatgrass and noxious weeds.

Mineral exploration, development, and production has a low probability of occurrence within herd management areas; therefore, minimal impacts are expected. However, these activities could potentially occur anywhere in the LRA. Diatomite mines exist in the Paisley Desert Herd Management Area. Potential impacts from mineral activity include displacement of horses, interruption of normal movements, and change in normal areas of use.

Grazing systems and range improvements designed to improve ecological condition, increase forage production and provide a stable environment for wild horses, as long as increased forage production is not entirely consumed by livestock. Under these conditions, appropriate management levels can be maintained and overall health of the herds would improve providing an overall beneficial impact. When livestock use is balanced with forage production, horses would have adequate forage during the summer and prior to winter. Adequate forage would help maintain the health of the herds and assist in maintaining viability. Livestock grazing is managed under rest rotation in both herd management areas. Based on previous studies, rest rotation grazing resulted in the significantly better conditions than all other systems. Changes in forage production as a result of changes in livestock grazing are expected to take 15 to 20 years before they are a significant benefit to wild horses. Vegetation changes are expected to benefit wild horses as herbaceous vegetation increases. Most change would occur on rangelands in fair condition in the Paisley Desert Herd Management Area, and on lands rated in mid seral in the Beaty Butte Herd Management Area. The herd management areas have different levels of vegetative survey: Paisley Desert information is based on forage condition, while Beaty Butte has a complete ecological site inventory; therefore, the herd areas are not directly comparable to each other.

Vegetation management designed for rehabilitation and restoration of disturbed lands including seedings, brush control, and prescribed or wildland fire, would reduce forage availability and habitat on approximately 20,000 acres in the short term, pending vegetative recovery from the initial disturbance. In the long term, vegetative productivity and diversity would be maintained or improved, and the viability and health of the herds would be maintained. Appropriate management levels could be increased if forage is increased.

Nonnative seedings within herd management areas benefit wild horses by providing a stable forage base and reducing competition with domestic livestock for nonnative forage.

Special status species occur in both herd management areas. Management designed to benefit special status species may limit opportunities to enhance wild horses and may conflict with the needs of wild horses, especially if protective fencing is used.

Weed management actions could limit the spread of noxious weeds, reducing impacts on forage production in the herd management areas.

Forage needs of wildlife, livestock, and wild horses are met under current management strategies. Bighorn sheep are managed in both herd management areas. In most instances, the habitats of bighorn sheep, livestock, and wild horses do not overlap. An exception would be near waterholes where animals would concentrate. In the future, if management objectives for wildlife, livestock, and wild horses are not met or achieved, adjustments in appropriate management levels may be necessary to meet other resource objectives. Current livestock levels could be maintained without reductions in appropriate management levels. As wild horse

numbers increase above appropriate management level, with no corresponding reduction in livestock numbers, key areas become overgrazed and forage production and availability decrease. Impacts to resources are compounded during periods of drought, resulting in decreased health of wild horses.

Water developments benefit wild horses, as well as livestock, because water is more limiting than forage in the herd management areas. Livestock operators maintain water developments used by livestock, wildlife, and wild horses. No further water developments are recommended in the Paisley Desert Herd Management Area. As many as nine water projects are recommended for the Beaty Butte Herd Management Area under this alternative. Water development could allow for increased appropriate management level, better health of animals during periods of drought, and increase the area used by horses.

Wild horses would be maintained within the boundaries of both herd management areas; therefore, all impacts from wild horse use would be confined to the herd management areas.

Viable herds of wild horses would be maintained in balance with the forage and other resources. Herd characteristics described in Table 2-32 would be maintained. Horses from outside the herd management areas may be introduced to maintain genetic diversity. Genetic diversity would improve the health of the herds. Returning the highest quality horses after gathering ensures that the herds are highly reproductive and is one of the most significant factors influencing the viability of the herds.

The present forage allocation underestimates the needs of wild horses as the upper end of the appropriate management level is reached. Forage is allocated for 80 percent of the animals in the herd management areas, but no forage is allocated for foals. If horses are not gathered exactly at the time the upper limit of the appropriate management level is reached, horses consume more than the allotted forage. Since gatherings are scheduled outside the normal foaling season, in most cases, forage is allocated to all horses at the top end of appropriate management level.

Alternative B

Fire, both wildland fire and prescribed fire, energy and mineral exploration and development, and noxious weed treatments would have the same impacts as Alternative A.

Vegetation treatments would benefit livestock more than wild horses. Competition for available forage would be increased. Periodic adjustments in appropriate management levels may be necessary, and the potential for appropriate management level adjustments would be greater than Alternative A as more emphasis is placed on livestock use of the forage.

Temporary nonrenewable grazing use would benefit livestock rather than horses, but would not negatively impact horses.

Management for special status species would have the same impacts as Alternative A. The need to fence special status plants may be greater under this alternative; therefore, the impacts described in Alternative A are more likely to occur.

Viable herds of horses would be maintained in both herd management areas.

Alternative C

Impacts from most resources would be similar to those under Alternative A, except the majority of negative impacts would be reduced. A significant positive affect to horses would result. Emphasis on natural values would limit the opportunities to enhance wild horses because appropriate management levels would not be maximized.

Conflicts with livestock for available forage and water would be reduced. Grazing systems and range improvements, designed to improve ecological condition, would have similar impacts to Alternative A, except that adjustments to wild horse appropriate management levels and livestock authorized use would be proportional.

Maintaining utilization levels in the light range on uplands would assure adequate forage availability for horses. Slight long-term increases in birth rates could be expected, along with increased winter forage, decreased winter deaths, and a general improvement in herd health. Herd characteristics would be maintained.

Road closures may limit the time during which gathering could be scheduled and the placement of trap sites. The potential for wild horse and human interactions would be reduced to the benefit of wild horses.

The impact from short-term forage loss as a result of proposed vegetation and restoration projects would have less of an impact than Alternative A because less emphasis would be placed on livestock use of the forage.

There would less potential for project development and less impacts to horses from project development.

Fencing would have the same impacts as Alternative A, although the amount of fence necessary for livestock management could be reduced.

Protection of springs in the Beaty Butte Herd Management Area may result in loss of water for wild horses. This could be offset by water developments elsewhere in the herd management area.

Alternative D

Impacts would be the same as under Alternative A, except that adjustments to wild horse appropriate management levels and livestock authorized use would be proportional.

Grazing systems and range improvements, designed to improve ecological condition, would have similar impacts to Alternative A, but would benefit wild horses as well as livestock.

The viability of wild horse herds would be maintained consistent with other uses. Established appropriate management levels would be increased initially and then maintained. Appropriate management levels may increase slightly in the long term as vegetation improves. Slight long-term increases in birth rates could be expected, along with increased winter forage, decreased winter deaths, and a general improvement in herd health. Herd characteristics would be maintained.

Alternative E

Competition between livestock and wild horses for available forage would be eliminated. Appropriate management levels would initially increase, and potentially increase further. Wild horses would be managed within the existing boundaries of herd management areas. Wild horse herds would be managed within the capabilities of the resources. Appropriate management levels would continue to be revised until a level of thriving ecological balance is determined. Resource deterioration from overgrazing would not be allowed.

Restrictive fencing would be removed, maximizing the area in which horses could roam freely. Healthy viable herds would be maintained. The potential to increase appropriate management levels is greatest under this alternative.

Gathers of excess horses would continue, but the time period between gathers could potentially be increased.

New project construction would be almost nonexistent—water developments would be considered if survival of the horses depended on the water.

Potential for loss of habitat from wildland fire is highest under this alternative.

Summary of Impacts

Under Alternative A, the objectives would be met with viable populations of wild horses maintained in all herd management areas. Appropriate management levels would remain constant in both herd management areas over the long term. In some instances, conflicts with livestock production and special status species may occur.

Under Alternative B, wild horse herds would be impacted more than in Alternative A because forage would be allocated to livestock before wild horses. Periodic adjustments of appropriate management levels may be necessary to ensure that wild horses are managed consistent with meeting other management objectives. Gathering of excess horses would likely occur more often than in the past in order to meet objectives commodity production. Increased gathering would increase stress on the herds.

Under Alternative C, the objectives for wild horses would be met and viable populations of wild horses would be maintained. Conflicts may occur on a site-specific basis. Herd health would be improved. The appropriate management levels would remain constant or could potentially increase.

Under Alternative D, the overall impacts to wild horses would be slight and positive. The objectives for wild horses would be met and viable populations of wild horses would be maintained. Conflicts may occur on a site-specific basis. Herd health would be improved as vegetation improves and forage is increased.

Under Alternative E, wild horse appropriate management levels could be maximized under this alternative because there would be not competition from livestock grazing. Viable healthy herds of horses would be maintained. Few conflicts would occur. The highest threat would be loss of habitat from wildland fire.

Implementation of Alternatives A, C, D, with constraints on livestock management, limited additional fence construction, and appropriate management of

wildland fire and range improvement projects, would best meet management objectives to maintain and manage viable herds of horses in established herd management areas, considering multiple use objectives. Proposed emphasis on livestock production, recreational use, and other commodity values in Alternative B, would increase disturbance of wild horses. Forage, habitat, and water sources for horses could be restricted. Wild horse herds could be maximized under Alternative E consistent with maintaining their habitat and forage resources to support viable, healthy herds of horses in the long term.

Secondary, Indirect, and Cumulative Impacts

Indirect impacts to horses generally occur after a stress event such as gathering. Indirect impacts may include spontaneous abortions, increased social displacement of band members, and conflicts such as brief skirmishes between studs.

Cumulative impacts under all alternatives would result in an annual average increase in horse numbers of 20 percent. Horses would be expected to adapt to changes such as increased vehicle use over time. Horses would adapt to changes in availability and distribution of critical habitat components of food, shelter, water, and space. Since the horses would be monitored and gathered periodically under all alternatives, they should be able to remain healthy within their existing herd areas. Increases in livestock numbers above that described in Alternative B could impact wild horse numbers in the long term and require downward adjustments in appropriate management level numbers—otherwise horses would remain at current appropriate management level.

Wild horses may cause cumulative impacts to unfenced private land in the Beaty Butte Herd Management Area. Approximately 9 percent of the herd management area is private land, characterized as rangeland similar to that described for BLM land. Many of the springs in the herd management area occur on private land. Private lands provide a good forage base for horses, but grazing competition is at a high level.

Cumulative impacts may occur as horses move to and from the Sheldon National Wildlife Refuge. Even though fencing along Highway 140 isolates most bands of horses from the Sheldon National Wildlife Refuge south of the highway, some interchange between herds does occur. If bands from the refuge mix with those in the Beaty Butte Herd Management Area, population-wide impacts, such as modification of age and sex ratios and separation of members of individual bands, may occur. The horses may be removed from the refuge in the future. If this occurs, horses from the Beaty Butte Herd Management Area could move onto the refuge in spite of the highway fencing.

Special Management Areas

Areas of Critical Environmental Concern

Management Goal—*Retain existing and designate new areas of critical environmental concern (ACEC's) and research natural areas (RNA's) where relevance and importance criteria are met and special management is required to protect the identified values.*

Appendix I contains a description of each existing and proposed ACEC including the relevant and important values of each area. Existing and proposed miles of road closures in each ACEC under each alternative are shown in Table 4-4.

Impacts Common to All Alternatives

Wildland fires would be suppressed primarily by hand in the existing ACEC's. Using heavy equipment would be prohibited unless specifically authorized by the area manager/designee. This prohibition would help to protect the relevant and important resource values in the ACEC's. Any rehabilitation of wildland fires would be done using native seed mixtures in order to retain the naturalness of the ACEC's. The use of prescribed fires in ACEC's would promote their naturalness by reintroducing fire into the ecosystem.

Under the alternatives and in those ACEC's where grazing would be allowed, livestock use would continue based on existing permit stipulations and approved allotment management plans. Any proposed changes in grazing, including time and intensity of use, would be evaluated for impacts on the relevant and important values and would be permitted if the values would be maintained or enhanced. Existing livestock use would be adjusted where adverse impacts are identified using a variety of methods, including but not limited to fencing, reduction in livestock numbers, changes in grazing season, and no livestock grazing permitted. Proposed projects would be evaluated for impacts and permitted where relevant and important values would be maintained or enhanced.

Analysis of Impacts: Devils Garden ACEC

Alternatives A–D

Closing the road into the Devils Garden in the center of the lava flow and to Derrick Cave (Map SMA-5) would protect these areas from impacts of vehicle use, soil compaction and disturbance to natural character, and return them to more natural conditions.

Prohibitions on temporary nonrenewable grazing use, wood cutting, mineral material sales, and excluding new rights-of-way would protect the area's naturalness and scenic character.

Alternative E

Under this alternative, no impacts would be expected as long as the area is in WSA status. If the area is not designated wilderness, and it is removed from WSA status, the integrity and scenic quality of the south end of the Lava Flow would be impacted as a result of mineral material disposal. OHV use on existing roads in the garden would continue to impact the naturalness of that area.

Analysis of Impacts: Lake Abert ACEC

Alternatives A–D

Under Alternatives A, B, C, and D, the Lake Abert ACEC would be retained. Under Alternatives A and B, the size of the ACEC would not increase. Retaining the ACEC designation would continue to provide protection and management direction for cultural resources within the existing ACEC area.

Under Alternative B, Lake Abert would be open to exploration, development, and mining of lakebed evaporite mineral salts. This would most likely occur at the north end of the lake. Such activity would have a negative impact on the water cycle of the lake, alter the water chemistry, and negatively impact shorebird habitat that has recently gained world-wide recognition.

Under Alternatives A, B, and D, increased protection of resources would be provided by limiting OHV use to existing roads and trails. Under Alternative C, a greater level of protection of resources would be provided by limiting OHV use to designated roads and trails. Some of the existing roads and trails would be closed, further limiting the possibility of damage by vehicles as well as limiting access to certain areas with large numbers of cultural sites or artifacts.

Alternative E

The ACEC designation would be revoked thereby removing special management to protect cultural, scenic, and biological values. The national historic district would remain in effect protecting cultural values. Lake Abert would be open to exploration, development, and mining of lakebed evaporite mineral salts. Impacts from mineral activity would be the same as under Alternative B.

Analysis of Impacts: Lost Forest/Sand Dunes/Fossil Lake ACEC/RNA

Alternative A and B

The Sand Dunes would continue to be open to OHV use. This would result in continued impacts from camping use such as tree cutting for fire wood, obliterating vegetation, disturbing soil, and vandalizing and shooting trees and rock formations in the Lost Forest RNA, particularly around Sand Rock. Development of a campground under Alternative B, either by BLM or a private party, would help to reduce these impacts. Impacts would be contained and concentrated in an area specifically designed for high use.

Under Alternatives A and B, the ACEC would be retained, thereby providing protection for the paleontological and cultural resources associated with Fossil Lake. The existing Fossil Lake protective fenced exclosure would continue to protect palentological and cultural sites from damage by OHV's, livestock trampling, and other disturbances. However, there would be no protection for newly-discovered paleontological and cultural sites which have been found in the sand dunes outside the existing fenced exclosure.

Under Alternative B, upgrading Road 6151 through the Lost Forest would reduce impacts from vehicles driving off road to avoid muddy or rocky areas, reduce soil compaction and damage to vegetation, and reduce erosion

Alternative C

Under Alternative C, maximum protection of paleontological and cultural resources would result from eliminating OHV use from the ACEC, limiting the size of the existing electrical powerline corridor, retaining the mineral withdrawal in the Lost Forest RNA, and removing livestock grazing from the entire area.

Table 4-4.—*Miles of roads open or closed in special management areas*

Area	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
	Open	Closed	Open	Closed	Open	Closed	Open	Closed	Open	Closed
Existing areas of critical environmental concern										
Devils Garden ACEC/WSA [1]	41.7	0.0	41.7	0.0	8.3	33.4	8.3	33.4	41.7	0.0
Lake Abert/Abert Rim ACEC/WSA [1]	47.8	0.5	47.8	0.5	29.8	18.5	42.2	6.1	48.3	0.0
Fossil Lake/Sand Dunes/Lost Forest ACEC/RNA/WSA [1]	40.6	28.2	35.3	28.2	2.5	60.0	34.7	28.8	43.9	24.9
Warner Wetlands ACEC	66.2	28.2	66.2	28.2	35.5	59.4	66.2	28.2	94.4	0.0
Proposed areas of critical environmental concern										
Black Hills ACEC/RNA	6.2	1.9	6.2	1.9	2.1	6.0	3.0	5.1	8.1	0.0
Connley Hills ACEC/RNA	7.1	0.0	7.1	0.0	2.2	4.9	2.2	4.9	7.1	0.0
Fish Creek Rim ACEC/RNA/WSA [1]	23.3	0.0	23.3	0.0	15.7	7.6	20.3	3.0 [2]	23.3	0.0
Foley Lake ACEC/RNA	6.3	0.0	6.3	0.0	4.4	2.1	4.4	1.9	6.3	0.0
Guano Creek/Sink Lakes ACEC/RNA [1]	6.4	0.0	6.4	0.0	5.1	1.3	5.1	1.3	6.4	0.0
Hawksie-Walksie ACEC/RNA [1]	36.3	0.0	36.3	0.0	28.2	8.1	28.2	8.1	36.3	0.0
High Lakes ACEC	78.2	0.0	78.2	0.0	56.9	21.3	50.0	21.3	78.2	0.0
Juniper Mountain ACEC/RNA	8.8	0.0	8.8	0.0	3.0	5.8	4.8	4.0	8.8	0.0
Rahilly-Gravelly ACEC/RNA	34.7	0.0	34.7	0.0	26.1	8.6	32.5	0.0	34.7	0.0
Red Knoll ACEC	10.8	0.0	10.8	0.0	4.5	6.3	4.5	6.3	10.8	0.0
Spanish Lake ACEC/RNA	7.4	0.0	7.4	0.0	5.2	2.2	5.2	2.2	7.4	0.0
Table Rock ACEC/RNA	9.2	0.0	9.2	0.0	6.3	2.9	6.3	2.9	9.2	0.0
Other areas										
Cabin Lake Deer Winter Range [3]	27.0	176.6	27.0	176.6	32.3	254.3	32.3	254.3	203.6	0.0
Total	458.0	235.4	452.7	235.4	268.1	502.7	350.2	411.8	668.5	24.9

[1] Includes WSA overlap with the ACEC.
[2] Mileage is in the WSA only.
[3] Closure is seasonal from December 1 to March 1 each year; the remainder of the year OHV's are limited to existing roads and trails.

Implementing these actions would reduce the possibility of surface disturbance of cultural sites or artifacts by up to 90 percent.

The limited effects of past grazing would be eliminated by prohibiting grazing within the ACEC's, thus improving the soils for microbiotic crusts, improving survival of grasses and forbs (perennial and annual), returning plant litter to the soil, and providing for greater productivity.

Closing the Lost Forest section of the ACEC to camping (day use only) would reduce vehicle and human use in fragile disturbed areas, especially around Sand Rock. This would also help eliminate the illegal cutting of trees for firewood and vandalism of trees and rocks in the area. OHV activity would be prohibited in the entire ACEC by designating all the areas closed to OHV use. This would have a positive effect on the area as vehicle and human negative effects on the dunes, on dune vegetation, and in the Lost Forest would be eliminated.

Alternative D

Under Alternative D, the size of the Fossil Lake Closure area would be increased to 9,379 acres to prevent damage to paleontological resources by OHV use in the area. The expanded closure area would be fenced, which would protect artifacts that are currently being found outside the existing fenced area. Outside the enlarged fenced area, the sand dunes would still be open to OHV use which could result in cultural and paleontological sites and artifacts being unearthed and destroyed. Protection of cultural and paleontological resources would be less than under Alternative C, but more than under Alternatives A and B. Livestock could also damage these resources since livestock grazing would continue under Alternative D.

Within the existing exclosure of Fossil Lake, native vegetation has returned and is stabilizing the enclosed area. This stabilization would be expected to occur in the enlarged exclosure area of low dunes. Rotating use of the camping and staging areas in the dunes would give those areas a chance for rehabilitation and vegetation. The inner dunes would have a chance to recover from damage including soil disturbance, erosion, and destruction of vegetation caused by activities associated with OHV use. Development of a campground either by BLM or a private party would further reduce these impacts. Impacts would be contained and concentrated in an area specifically designed for high use. Providing designated access routes between a campground and the dunes would further limit impacts to soil and vegetation caused by OHV's.

Alternative E

Under Alternative E, the impacts to cultural and paleontological resources as well as biological resources would be similar to those under Alternative C, since the Sand Dunes would be closed to OHV's.

Analysis of Impacts: Warner Wetlands ACEC

Alternatives A–D

Under Alternative A, B, C, and D, the ACEC would be retained and management direction and protection of the cultural resources would continue as at present. No changes or additions to this ACEC are proposed which would cause impacts to cultural resources under these alternatives. Changing the grazing use in the meadow management area would not impact the ACEC as a whole. Limiting OHV use to designated roads and trails would result in 28–60 miles of roads being closed (Map SMA-10), thereby reducing soil compact and erosion on these roads. Reducing OHV access would also reduce disturbance to wildlife.

Alternative E

Under Alternative E, the ACEC designation would be revoked and some fences not needed to protect wildlife habitat would be removed. This could open the area to more vehicle and people access which could result in more disturbance soil and vegetation, disturbance to wildlife, and vandalism and illegal collecting of artifacts at cultural sites.

Analysis of Impacts: Proposed Abert Rim Addition to Lake Abert ACEC

Alternatives A and B

Under Alternatives A and B, Abert Rim would not be added to the existing ACEC. This would not provide special management direction and protection of the ACEC to the cultural and traditional cultural properties which have been identified in the adjacent area.

Alternative C

Under Alternative C, 18,027 acres would be added to the ACEC, providing special management direction and protection for significant cultural and traditional cultural properties located within the addition area. Limiting OHV use to designated roads and trails would

result in18.5 miles of roads being closed, thereby reducing soil compact and erosion on these roads.

Alternative D

Under Alternative D, impacts would be similar to those under Alternative C, except that grazing would be allowed to continue, reducing the protection of cultural sites from trampling by livestock.

Alternative E

Under Alternative E, the existing ACEC designation would be revoked and no new ACEC would be designated. This would eliminate any special protection and management for cultural resources in the area. However, cultural resources would be generally protected since neither livestock grazing nor any other commercial activities would be allowed. Recreation use would continue; therefore, there could be damage to cultural sites from illegal artifact collecting and vandalism.

Analysis of Impacts: Proposed Black Hills ACEC/ RNA

Alternatives A and B

Black Hills would not be designated an ACEC under either of these alternatives. The area would continue to be impacted by recreation use resulting in trash being left in the area, individuals vandalizing the parking area fence and interpretive sign, OHV's being driven off the existing road, and firearms shooters targeting trees, rocks, and signs. The special status plants Cusick's buckwheat and snowline cymopterus would benefit from management and protection provided by the conservation agreement with USFWS; however, they would be vulnerable to damage from the above described activities.

Alternative C

Plant or plant material collecting for personal use would be closed. This would have some short-term and long-term positive impacts on biological resources, but it would depend on ease of access to the area. Closing the area to OHV use would reduce impacts of the road into the area and trails created by OHV's driving off of this road. The road would be closed, reclaimed, and eventually revegetated. Closing the road would also eliminate most impacts from recreation use described under Alternatives A and B. Individuals would still have access to the area, but would not be able to do so with a vehicle. Closing the ACEC to livestock grazing and wild horse use would eliminate potential impacts special status plants from these sources.

Alternative D

The Black Hills have medium potential for occurrence of geothermal resources. However, the area would be open with a no-surface-occupancy stipulation, which would ensure protection of the relevant and important resources from this activity.

Impacts from recreation use of the area would continue but would be reduced by limiting OHV's to designated roads and trails. Limiting OHV use to designated roads and trails would result in 5 miles of roads being closed (Map SMA-11), thereby reducing soil compact and erosion on these roads. Livestock grazing would be as described under Impacts Common to All Alternatives.

Alternative E

The ACEC would not be designated. Impacts would be the same as for Alternatives A and B.

Analysis of Impacts: Proposed Connley Hills ACEC/ RNA

Alternative A

The ACEC/RNA would not be designated under this alternative. Current uses and associated impacts would continue. The four ONHP plant cells identified in the area (see Appendix I) would not be provided special management or protection. These cells could possibly be lost in the long term under continued present management.

Alternative B

Under Alternative B, 3,599 acres would be designated as an ACEC. Special management and protection would be afforded to cultural resources as a result of designation. Limiting OHV use to existing roads and trails, requiring no surface occupancy for any oil and gas or geothermal exploration and development, and prohibiting any woodcutting would reduce surface disturbance, reduce vegetation destruction, and reduce soil compaction and subsequent runoff and erosion.

Alternative C

Under Alternatives C and D, 3,675 acres would be designated as an ACEC/RNA. Limiting OHV use to existing roads and trails, closing some roads, removing camping from the area, excluding new rights-of-way,

and restricting the sale and lease of minerals would be a positive impact for cultural resources by limiting access, use, and potentially site disturbing activities in the area. These actions would also reduce the impacts identified in Alternative B, above.

Acquiring the 80-acre inholding from a willing landowner(s) would facilitate managing the ACEC as a whole unit and eliminate any potential management conflicts with the private land. Closing the ACEC to grazing would eliminate gazing impacts to the four bunchgrass cells, the protection and management of which is the primary reason for designation of the ACEC/RNA.

Alternative D

Impacts would be the same as for Alternative C, except that grazing would be allowed but would be carefully monitored to assess impacts to the bunch grass communities (see Impacts Common to All Alternatives).

Alternative E

Under Alternative E, no ACEC would be designated. This would eliminate any special protection and management for cultural resources in the area. However, cultural resources would be generally protected since neither livestock grazing nor any other commercial activities would be allowed. Recreation use would continue; therefore, there could be damage to sites from illegal artifact collecting and vandalism. No designation would mean no special provision would be made for protection or management of the four ONHP cell plant communities; however, since no grazing or commercial activity would occur, the cells would exist in a more natural situation. The plant communities would be monitored and impacts determined over time.

Analysis of Impacts: Proposed Fish Creek Rim ACEC/RNA

Alternatives A and B

Under Alternatives A and B, no designation would be made and no additional management direction and protection would be provided for the resources. The four ONHP plant cells identified in the area as well as the two special status plant species (Appendix I) would not receive special management or protection, and could be lost in the long term. Continued management of the WSA would provide some protection to these botanical values.

Alternative C

Under Alternative C, 8,725 acres would be designated as an ACEC. Management actions prescribed for the ACEC would provide management direction and protection of the cultural resources. Limiting OHV use to designated roads and trails, closing the area to sale and lease of minerals, excluding new rights-of-way and prohibiting certain types of vegetation removal and manipulation would benefit cultural and botanical resources including the four ONHP cells and two sensitive plant species. These actions would reduce surface disturbance and direct destruction of cultural artifacts, thereby maintaining the integrity and, hence, the scientific value of cultural sites. This action would also maintain the integrity of the special plants and plant community habitats by reducing surface disturbing activities and direct destruction of vegetation by vehicles. Livestock grazing would be as described under Impacts Common to All Alternatives.

Alternative D

Under Alternative D, 8,725 acres would be designated as an ACEC/RNA. Closing the area to sale or lease of minerals, avoiding new rights-of-way, and limiting the OHV use to existing roads and trails would benefit both cultural and botanical values in the ACEC/RNA. Livestock grazing would be the same as Alternative C. However, protection would not be as great as under Alternative C, where these uses are more restricted or eliminated altogether.

Alternative E

No designation would mean no special provision would be made for the protection or management of the four ONHP cell plant communities and the two special status plant species; however, since no grazing or other commercial activity would occur, these plants and plant communities would exist in a more natural situation. The ONHP cell plant communities and special stautus plants would be monitored and impacts determined over time. Likewise there would be no special protection for the cultural resources in the area. However, cultural resources would be generally protected since neither livestock grazing nor any other commercial activities would be allowed. Recreation use would continue, therefore, there could be damage to sites from illegal artifact collecting and vandalism.

Analysis of Impacts: Proposed Foley Lake ACEC/ RNA

Alternative A and B

Under Alternatives A and B, no designation would be made, therefore, no special management direction and protection would be provided for the resources. The one ONHP plant cell identified in the area (Appendix I) would not receive special management or protection, and could be lost in the long term under continued present management. Maintaining the conservation agreement with the USFWS for Columbia cress and the existing exclosure would help to ensure the continued existence of this special status plant species.

Alternative C

Under Alternative C, 2,747 acres would be designated and ACEC/RNA. Excluding grazing, excluding new rights-of-way, limiting OHV's to designated roads and trails, and excluding the sale or lease of minerals would have a positive impact on the condition and continued existence of the ONHP cell plant community and Columbia cress. Enlarging the exclosure to protect the cress from grazing and surface disturbing activity and continuing the USFWS conservation agreement would be a significant benefit to Columbia cress. Research over the past 12 years supports closing the entire playa to wildlife and livestock grazing.

Alternative D

Under Alternative D, 2,230 acres would be designated and ACEC/RNA. Impacts under Alternative D would be similar to Alternative C, however, the area would be open to livestock grazing and all mineral activity (see Impacts Common to All Alternatives). The black sagebrush/bunchgrass cell community would be monitored to determine any impacts from grazing. Mineral activity is not likely since the area has only moderate potential for geothermal resources. Impacts to Columbia cress would be the same as identified under Alternative C since the population would be fenced to protect it from grazing.

Alternative E

No designation would mean no special provision would be made for the protection or management of the one ONHP cell plant community; however, since no grazing or of commercial activity would occur, the cell would exist in a more natural situation. The plant community would be monitored and impacts determined over time. The conservation agreement with the USFWS would provide some special management to Columbia cress.

Analysis of Impacts: Proposed Guano Creek/Sink Lakes ACEC/RNA

Alternative A and B

Under Alternatives A and B, no designation would be made, therefore, no special management direction and protection would be provided for the resources. The two ONHP plant cells identified in the area (Appendix I) would not receive special management or protection, and could be lost in the long term. However, continued management of the area as a WSA would provide some protection to the two cells. Implementing the conservation agreement with the USFWS would benefit two spacial status plants, Crosby's buckwheat and grimy ivesia.

Alternative C

Under Alternative C, 4,963 acres would be designated and ACEC/RNA. Locatable mineral development in the ACEC is unlikely due to low potential. Closing the area to all other mineral activity would prevent impacts of road building, vegetation removal, and vehicle traffic to the relevant and important resources in the ACEC.

Limiting OHV's to designated roads and trails, excluding new rights-of-way, closing the area to sale or lease of minerals, and maintaining the current grazing closure would benefit the condition and continued existence of the two plant cell communities and the two special status plants. These healthy representations of natural systems would have a better chance of surviving and representing biodiversity where no grazing is allowed and other surface disturbing activities are limited. Implementing the conservation agreement with the USFWS would be an additional benefit for the two special status plants.

Alternative D

Impacts would be the same as under Alternative C.

Alternative E

No designation would mean no special provision would be made for the protection or management of the two ONHP cells; however, since no grazing or of commercial activity would occur, the cells would exist in a

more natural situation. The ONHP cell plant communities and special stautus plants would be monitored and impacts determined over time. Implementing the conservation agreement with the USFWS would benefit two special status plants, Crosby's buckwheat and grimy ivesia. Continued management of the area as a WSA would provide some protection to the botanical values.

Analysis of Impacts: Proposed Hawksie-Walksie ACEC/RNA

Alternatives A and B

Under Alternatives A and B, no designation would be made and no additional management direction and protection would be provided for the resources. The two ONHP plant cells identified in the area as well as the high quality grasslands unique to that area (Appendix I) would not receive special management or protection, and could be lost in the long term. However, continued management of the area as a WSA would provide some protection to the two cells as well as the grasslands.

Alternative C

Under Alternative C, 17,339 acres would be designated as an ACEC/RNA. Management actions prescribed for the ACEC would provide management direction and protection of the cultural resources. Excluding rights-of-way, removing livestock grazing, limiting OHV use to designated roads and trails, and closing some roads and trails would protect cultural sites from surface disturbance, direct destruction of artifacts, and human access. Livestock grazing would still be allowed (see Impacts Common to All Alternatives), but parts of the ACEC's would be fenced to protect the grass cell components. These actions would significantly benefit the integrity and scientific value of cultural sites.

These actions would also protect the two ONHP cells and the high quality grasslands. Fencing areas in the ACEC to exclude livestock and wild horses would be a significant benefit to the botanical resources in the ACEC/RNA. These healthy representations of natural systems would have a better chance of surviving and containing biodiversity where no grazing is allowed and fences are constructed to limit wild horse access.

Alternative D

Under Alternative D, 17,339 acres would be designated as an ACEC/RNA. Management directions prescribed for the ACEC would provide special management direction and protection similar to Alternative C, especially fencing of part of the ACEC to protect plan cells from livestock grazing. The unfenced part of the ACEC would be monitored to determine any impacts from grazing.

Alternative E

No designation would mean no special provision would be made for the protection or management of the two ONHP cells or the high quality grasslands; however, since no grazing or of commercial activity would occur, these sites would exist in a more natural situation. The ONHP cell plant communities and special status plants would be monitored and impacts determined over time.

No ACEC/RNA designation would eliminate any special protection and management for cultural resources in the area. However, cultural resources would be generally protected since neither livestock grazing nor any other commercial activities would be allowed. Recreation use would continue, therefore, there could be damage to sites from illegal artifact collecting and vandalism.

Analysis of Impacts: Proposed High Lakes ACEC

Alternatives A and B

Under Alternatives A and B, no designation would be made and no additional management direction and protection would be provided for the cultural resources and cultural plants in the area (Appendix I).

Alternative C

Under Alternative C, 40,095 acres would be designated as an ACEC. Management actions prescribed for the ACEC would provide protection and management direction for cultural resources. Closing the area to sale and lease of minerals, allowing no new rights-of-way, closing the area to livestock grazing, and limiting OHV's to designated roads and trails, and closing other roads and trails would protect cultural sites from surface disturbance, direct destruction of artifacts, and vandalism often resulting from human access. Livestock grazing would be allowed, but under the restrictions as listed in Impacts Common to All Alternatives. These actions would significantly benefit the integrity and scientific value of cultural sites. Limiting surface disturbing activities and adjusting grazing use to meet the needs of cultural plants would also benefit these species and help to ensure their abundance and contin-

ued survival. This would be a benefit to local Tribes who desire to be able to harvest these plants for traditional or ceremonial uses.

Acquisition of adjacent private land could facilitate management of the area by providing a more easily definable boundary for the ACEC and ensuring access to the west side of the area. However, acquisition of the land would not be necessary to manage the area as an ACEC.

Alternative D

Under Alternative D, 36,755 acres would be designated as an ACEC. ACEC management actions would provide additional protection and management direction for cultural resources. Protection would be provided by limiting mineral extraction, livestock grazing, and rights-of-way. OHV use would be limited to designated roads and trails and some roads would be closed (Appendix I), thereby limiting access to some areas and reducing the vandalism often resulting from human access. Other impacts would be similar to those under Alternative C, but to a lesser degree since actions under this alternative would be less restricted.

Impacts to cultural plants and Native American use of the area and plants would be the same as described under Alternative C.

Acquiring legal access across the private land on the west side would ensure administrative access for management on that side of the ACEC. This would help to facilitate management of the entire ACEC.

Alternative E

Under Alternative E, no ACEC would be designated. This would eliminate any special protection and management for cultural resources and cultural plants in the area. However, cultural resources and plants would be generally protected since neither livestock grazing nor any other commercial activities would be allowed. Recreation use would continue, therefore, there could be damage to sites from illegal artifact collecting and vandalism. Although Native Americans and others would still be able to harvest cultural plants, these plants would have no special protection or management. Long term impacts on their continued existence would be uncertain.

Analysis of Impacts: Proposed Juniper Mountain ACEC/RNA

Alternatives A and B

Under Alternatives A and B, no designation would be made and no additional management direction and protection would be provided for the resources. The one ONHP plant cell identified in the area as well as the old growth juniper woodland unique to that area (Appendix I) would not receive special management or protection, and could be lost in the long term under continued present management. Continued woodcutting in the juniper stand could have a detrimental effect in the long term by eliminating trees, creating openings in the stand, and changing its character.

Alternative C

Under Alternative C, 6,335 acres would be designated an ACEC/RNA. All commercial wood or plant collection would be prohibited. This would have some short-term and long-term positive impacts on biological resources. Closing the area to wood cutting would protect the old growth trees and the ecological and scientific values associated with an old-growth juniper woodland. These actions as well as closing the area to the sale or lease of minerals, limiting OHV's to existing roads and trails, and closing the area to camping would maintain the woodland's existing character and allow natural processes to operate in a relatively undisturbed area. This would in turn facilitate the continued research presently ongoing in the woodland.

Grazing would continue as described in Impacts Common to All Alternatives. Acquiring the 80 acres around Coffee Pot Spring in the northwest portion of the ACEC would facilitate managing the entire area in the same manner and as one unit and eliminate any potential conflict with management of the private land.

Alternative D

Under Alternative D, 6,335 acres would be designated and ACEC/RNA. Although mineral exploration and development is not likely due to the relatively low potentials for occurrence in the area (low for geothermal and moderate for oil and gas), any activity would be subject to a no-surface-occupancy stipulation. This would protect the integrity of the woodland. All other impacts under this alternative would be the same as those described under Alternative C, except that camping would be allowed. No impacts from camping would be expected as long as green or standing trees

were not cut. Livestock grazing would be the same as in Alternative C.

Alternative E

There would be no ACEC/RNA designation, neither would there be any commercial activity including woodcutting, livestock grazing, or mineral development. Therefore, no negative impacts are likely to occur under this alternative. Recreational use of the area including camping would continue with no expected impact. Scientific study and research would continue as at present.

Analysis of Impacts: Proposed Rahilly-Gravelly ACEC/RNA

Alternatives A and B

Under Alternatives A and B, no designation would be made and no additional management direction and protection would be provided for the relevant and important resources in the area. The one ONHP plant cell identified in the area as well as the one special status plant species unique to that area, Cooper's goldflower, (Appendix I) would not receive special management or protection, and could be lost in the long term under continued present management.

About two-thirds of the ACEC/RNA is within the Crump Geyser Known Geothermal Resource Area which means that geothermal exploration and development in the future is likely. This could be a significant negative impact to the special status plant, the cultural plants, and the cultural resource sites in the area depending on how the activity is conducted. Stipulations would be attached to any lease issued to protect the special resources in the area as much as possible.

Alternative C

Under Alternative C, 20,127 acres would be designated as an ACEC/RNA. Management actions prescribed for the ACEC would provide management direction and protection for cultural resources. Specifically, protection would result from limiting OHV use to existing roads and trails, allowing no sale of minerals, restricting removal or manipulation of vegetation, and restricting recreational uses. These actions would significantly benefit the integrity and, hence, the scientific value of cultural sites.

The area would be open to mineral leasing under a no-surface-occupancy stipulation. This would mean that any geothermal exploration or development would have to be done from outside the area which would eliminate any impacts to cultural resources or plant communities and special status species.

Limiting surface disturbing activities and adjusting grazing use to meet the needs of cultural plants would also benefit these species and help to ensure their abundance and continued survival. Allowing collecting of vegetative material including cultural plants would allow Native Americans to continue to use the area for traditional purposes. It would ensure having one more area available to them where cultural plants are still obtainable. This would be a benefit to the Tribes who desire to be able to harvest these plants for traditional or ceremonial uses. Grazing would be as described in Impacts Common to All Alternatives.

Alternative D

Under Alternative D, 19,648 acres would be designated as an ACEC/RNA. ACEC management actions would provide management direction and protection for the resources. Protection would be provided by restricting sand and gravel sales, lease of minerals, restricting geothermal activity to no surface occupancy, avoiding new rights-of way within the area, limiting OHV use to existing roads and trails, and adjusting livestock grazing as needed. Impacts would be similar to those under Alternative C.

Impacts to plant cell communities and the special status plant, and impacts to cultural plants and their use by local Tribes would also be the same as Alternative C. Grazing would be as described in Impacts Common to All Alternatives.

Alternative E

Under Alternative E, no ACEC would be designated. This would eliminate any special protection and management for cultural resources in the area. However, cultural resources, cultural plants, and other botanical values in the area would be generally protected since neither livestock grazing nor any other commercial activities including geothermal exploration and development would be allowed. Recreation use would continue, therefore, there could be damage to sites from illegal artifact collecting and vandalism.

Although Native Americans and others would still be able to harvest cultural plants, these plants would have no special protection or management. Long-term impacts on their continued existence would be uncertain.

Analysis of Impacts: Proposed Red Knoll ACEC

Alternatives A and B

Under Alternatives A and B, no designation would be made and no additional management direction and protection would be provided for the resources including two special status plant species, a number of cultural plants, and an abundance of cultural resource sites (Appendix I).

Alternative C

Under Alternative C, 11,588 acres would be designated as an ACEC. Management actions prescribed for the ACEC would provide management direction and protection of the cultural resources. Withdrawing the area from mineral entry, excluding new rights-of-way, closing the area to livestock grazing, and limiting OHV use to existing roads and trails would reduce surface disturbance and direct destruction of artifacts which would significantly benefit the integrity and, hence, the scientific value of cultural sites.

Limiting surface disturbing activities and eliminating grazing would prevent damage or destruction of the cultural plants and the special status plants in the area. Allowing collecting of vegetative material including cultural plants for individual use would enable Native Americans to continue to use the area for traditional or ceremonial purposes. It would ensure having one more area available to them where cultural plants are still obtainable.

Alternative D

Under Alternative D, 11,127 acres would be designated and ACEC. ACEC management actions would provide management direction and protection for the resources. Withdrawing approximately 4,600 acres of the area (where mineral exploration and development is most likely to occur) from mineral entry, avoiding new rights-of-way, and limiting OHV use to existing roads and trails would significantly benefit the integrity and, hence, the scientific value of cultural sites. However, the protection would not be as great as it would be under Alternative C where these uses are more restricted or eliminated altogether.

Impacts to cultural plants and special status plants would be similar to those under Alternative C, except that livestock grazing would continue. However, grazing could be adjusted to reduce impacts to cultural plants or special status plants if necessary, and the guidelines under Impacts Common to All Alternatives would apply.

Alternative E

Under Alternative E, no ACEC would be designated. This would eliminate any special protection and management for cultural resources in the area. However, cultural resources would be generally protected since neither livestock grazing nor any other commercial activities would be allowed. Recreation use would continue, therefore, there could be damage to sites from illegal artifact collecting and vandalism.

No designation would mean no special provision would be made for the protection or management of the two special status species; however, since no grazing or commercial activity would occur, the plants would exist in a more natural situation. These plants would be monitored and impacts determined over time.

Similarly, cultural plants would exist in a more natural situation and Native Americans and others would still be able to harvest them. However, the long term impacts on their continued existence would be uncertain

Analysis of Impacts: Proposed Spanish Lake ACEC/ RNA

Alternatives A and B

Under Alternatives A and B, no designation would be made and no additional management direction and protection would be provided for the resources. The two ONHP plant cells identified in the area (Appendix I) would not receive special management or protection, and could be lost over time under continued management.

Alternative C

Under Alternative C, 4,699 acres would be designated an ACEC/RNA. Limiting OHV use to designated roads and trails, excluding new rights-of-ways, and closing the area to sale or lease of minerals would protect the two plant cell habitats by reducing potential soil disturbance and vegetation destruction or removal. Livestock grazing would not be allowed in the ACEC, and the area would be fenced for protection from wildlife and livestock.

Alternative D

Under Alternative D, 4,699 acres would be designated an ACEC/RNA. The ACEC is in an area of moderate potential for geothermal resources. Any exploration and development could impact the two plant cells by crushing vegetation or removing vegetation by vehicles driving off-road or by constructing new roads. Any geothermal leases would be issued with stipulations to protect resources as much as possible.

Impacts from livestock grazing would be evaluated and controlled through the adaptive management process which would identify the practices that would provide the best mitigation.

Alternative E

No designation would mean no special provision would be made for the protection or management of the two ONHP cells; however, since no grazing or of commercial activity would occur, the cells would exist in a more natural situation. The ONHP cell plant communities would be monitored and impacts determined over time.

Analysis of Impacts: Proposed Table Rock ACEC/ RNA

Alternatives A and B

Under Alternatives A and B, no designation would be made and no additional management direction and protection would be provided for the cultural resources and cultural plants in the area (Appendix I). The special status plants Cusick's buckwheat and snowline cymopterus would benefit from management and protection provided by the conservation agreement with USFWS.

Alternative C

Under Alternative C, 5,891acres would be designated as an ACEC. Management actions prescribed for the ACEC would provide management direction and protection of the cultural resources. Prohibiting new rights-of-way and reality actions, closing the area to sale and lease of minerals, closing the area to livestock grazing, prohibiting certain types of vegetation removal and manipulation, and limiting OHV use to existing roads and trails would reduce surface disturbance and direct destruction of artifacts, thereby maintaining the integrity and, hence, the scientific value of cultural sites. These actions would also reduce impacts to special status plants.

Alternative D

Under Alternative D, 5,138 acres would be designated an ACEC/RNA. ACEC management actions would provide protection by avoiding new rights-of-way, restricting the sale and lease of minerals, closing the area to livestock grazing, and restricting OHV use to existing roads and trails. Impacts would be similar to those described under Alternative C; however, protection would not be as great since these uses are more restricted or eliminated altogether under Alternative C.

Table Rock has moderate potential for development of geothermal resources, however, the area would be open with a no-surface-occupancy stipulation. This would ensure protection of the relevant and important resources in the ACEC from this activity.

Alternative E

Under Alternative E, no ACEC would be designated. This would eliminate any special protection and management for cultural resources in the area. However, cultural resources would be generally protected since neither livestock grazing nor any other commercial activities would be allowed. Recreation use would continue, therefore, there could be damage to sites from illegal artifact collecting and vandalism.

The special status plants Cusick's buckwheat and snowline cymopterus would benefit from management and protection provided by the conservation agreement with USFWS.

Summary of Impacts

Under Alternative A, no new ACEC's would be designated and four existing ones would be retained. Under Alternative B, existing ACEC's would be retained and only one new area, Connley Hills, would be designated. Under Alternatives C and D, existing ACEC's would be retained, 1 would be enlarged, and 12 new ACEC's would be designated. Under Alternative C and D, nine new RNA's would be designated within nine of the ACEC's. Under Alternative E all existing ACEC designations would be revoked and no new ACEC's would be designated. Management under Alternative E for these areas would be the same as that applied across the planning area.

The overall impact on currently designated ACEC's is projected to be generally beneficial in Alternative A, although lack of restrictions on certain activities in

some ACEC's leaves them vulnerable to adverse change. Twelve areas with identified relevant and important values would not be designated as ACEC/ RNA's, and would, therefore, not receive priority for special management attention. The overall impact may be adverse in those undesignated areas. The ACEC's objective would be met generally in the existing ACEC's and priority for management would be extended to these areas.

In Alternative B, the overall impact on the existing and the one proposed ACEC's is projected to be somewhat beneficial, although on small acreages, minimally representing relevant and important values for some areas, would receive special management attention. Eleven potential ACEC's would not be proposed, and the overall impact may be adverse in these undesignated areas not receiving priority management attention, and emphasis on commodity uses would increase the risk of adverse impacts. The ACEC's objective would be met generally in the existing ACEC's and the Connley Hills.

In Alternative C, the overall impact on currently designated ACEC's is projected to be generally beneficial, although lack of restrictions on certain activities in some ACEC's leaves them vulnerable to adverse change. The emphasis on management for natural values would provide indirect benefits to the proposed ACEC's and special management actions that mitigate adverse effects would be implemented for activities with ACEC's, and priority for management would be extended to areas designated as ACEC's. Alternative C would provide the most extensive and most restrictice management for areas identified with relevant and important values. Overall, the ACEC's objective would be met for an extensive representation of relevant and important values in the areas designated as ACEC's.

In Alternative C, the impacts from livestock grazing would be significantly less because 102,412 acres within nine existing or proposed ACEC's would be closed to grazing. This would provide greater protection to special status plants and plant communities in these areas.

Under Alternative C, all ACEC's would be closed to mineral sale and leasing, but would remain open to locatable minerals, except for Red Knoll where the entire ACEC would be withdrawn from mineral activity. Surface disturbing activity associated with locatable mineral entry would be prohibited in ACEC's that overlap WSA's. Surface disturbance requiring reclamation is prohibited in WSA's. These actions would lessen or eliminate the negative effects of mineral extraction and development such as road building and physical changes and damage to soils and vegetation around mine sites

Under Alternatives C and D, the protection by special management of the 12 new ACEC's would help preserve and protect the areas designated as ONHP cells. These healthy representations of natural systems would have a better chance of surviving and containing biodiversity where no grazing is allowed and fences are constructed to limit wild horse access. Tribal Peoples would have access to traditional resources and use areas in eight ACEC's set aside partially for cultural values and plants. This would ensure that these areas and resources are available for traditional and ceremonial practices in the future.

The overall impact on areas of existing and proposed ACEC's is projected to be beneficial in Alternative D, although lack of restrictions on certain activities in some ACEC's leaves them vulnerable to adverse change. Special management actions that mitigate effects of adverse impacts would be implemented for activities within the ACEC's; however, special monitoring of commodity use such as livestock grazing and wild horse use would be necessary. Overall, the ACEC's objective could be met for an extensive representation of relevant and important values in the areas designated as ACEC's.

In Alternative D, leasable mineral development is open or open with no surface occupancy for the majority of the existing and proposed ACEC's. At Red Knoll, only the northern section would be closed and the area withdrawn from mineral entry. Leasable mineral development is unlikely in most of the ACEC's due to low potential; however, where there is potential for development of geothermal resources as in Black Hills, Connley Hills, Juniper Mountain, Rahilly-Gravelly, Sink Lakes, and Table Rock, the areas would be open with a no-surface-occupancy stipulation. This would protect the botanical and cultural resources in these areas. The Rahilly-Gravelly ACEC would be the most likely candidate for geothermal exploration and development due to the presence of the Crump Geyser Known Geothermal Resource Area. Except for the Lost Forest section of the Lost Forest/Sand Dunes/ Fossil Lake ACEC and the northwest portion of Red Knoll ACEC, all other ACEC's are open to locatable minerals; however, no disturbance could occur in those portions of ACEC's within WSA's and the ISA until they are released from wilderness study. Sale of minerals would be closed for five of the ACEC's. Areas remaining open would be subject to potential

adverse impacts from mineral activities as in other alternatives. In the withdrawal area of Red Knoll, that portion would be fully protected from disturbances due to mineral exploration and development and would allow the area to be used for cultural reasons.

In Alternative E, all ACEC/RNA's designations would be removed from existing designated areas and no new designations would occur. The cessation of many activities, including livestock grazing, all mineral activities, and all project development, would permit natural functions and processes to occur within the natural systems. However, the increased horse numbers, nonaggressive weed control, and no management of woodland areas would result in long-term adverse impacts to resource values in many of the areas where relevant and important values have been identified. Overall, the objective would not be met because it does not provide the necessary protection for relevant and important values due to long-term adverse impacts to those values.

Under Alternative E, the management of wildland and prescribed fire would not be beneficial to the values identified for ACEC's. There would be no prescribed fires, nor would there be rehabilitation of burned areas. Wildland fires would be allowed to burn except when endangering life or private property. These policies would create a repeated wildland fire regime which could result in large stands of cheatgrass and noxious weeds—which in turn would create a higher potential for repeated wildland fires. This policy would cause damage to the relevant and important values of all the ACEC's.

Recreation use would be expected to increase, particularly in areas which had been previously designated such as the Lost Forest/Sand Dune ACEC's. Unless regulated, recreation use would result in adverse impacts to cultural and natural values. Overall, impacts of recreation use are anticipated to be moderate.

With limited or no noxious weed control under Alternative E, weeds may become established throughout the project area, resulting in degradation of natural values and severe long-term adverse impacts to natural area communities, plant/animal interaction, and biodiversity.

Secondary, Indirect, and Cumulative Impacts

The major secondary, indirect, or cumulative impacts to ACEC's is loss of relevant and important values such as special status species, unique plant communities, habitats, conversion to marginal plant communities, and loss of cultural values. Up to 147,149 acres of new ACEC's and 167,020 acres of existing ACEC's would be set aside to protect and have special management for special status species (plant and animal), cultural values, scenic values, and unique plant communities. Ten RNA's within these ACEC's would be available for researchers and exist as examples of plant communities for the entire State of Oregon. The impacts from activities implemented on the adjacent USFS, USFWS, state, and private lands, create additional cumulative impacts to BLM-authorized actions. Especially noteworthy is the increase of OHV recreation in the resource area, some from the closure of sand dunes on the Oregon coast and overflow from OHV areas in the Prineville District. Changes in usage of the dunes since 1939 is being studied by researchers to determine the cumulative impacts of OHV use of the dunes. Recreation is predicted to increase just from the increase of population in Oregon which would have an effect on recreation sites, roads, and would have a special impact in areas of traditional congregation of campsites. A positive cumulative impact would be the use of 122,560 acres by Tribal Peoples for cultural resources and practices; thus strengthening our trust responsibility agreements.

Lack of weed policies and prevention on non-BLM lands has a negative effect on biodiversity of the plant communities within ACEC's; both short term and long term with loss of biodiversity.

The role of wildland fire policies in non-BLM lands could also negatively impact the existing and proposed ACEC's in the long term, especially by disturbing the connectivity of plant and animal species habitats and by changing the wildland fire regimes.

If Congress decides that the WSA's that overlap the ACEC's be declared wilderness, the values of the ACEC's would be greatly enhanced and would receive maximum protection.

Wilderness Values

Management Goal—*BLM-administered land acquired since the wilderness inventory and determined to have wilderness values would be included in adjacent wilderness study areas (WSA's). WSA's and WSA additions would be managed under the 1995 "Interim Management Policy for Lands Under Wilderness Review" (wilderness IMP).*

Analysis of Impacts

Alternative A

Under the current situation, there have been no parcels of land that are adjacent to, or within any existing WSA's assessed through the land management process to determine if they would be suitable for wilderness designation. Until the assessment of any acquired lands is completed, there is a potential for the wilderness values for these areas to be impaired because they would not be afforded the same level of protection as they would under the wilderness IMP.

Overall, wilderness values associated with the 12 WSA's within the LRA would not be degraded under the current situation. The Sand Dunes WSA would remain open to motorized uses. The opportunity for visual solitude within the Sand Dunes WSA is greatest within the central core where the largest dunes occur. The opportunity for visual and auditory solitude is diminished toward the boundary areas of the WSA; sounds from human activities outside of the WSA influence solitude within these areas as well. The continued motorized use of the Sand Dunes would preclude solitude potential, especially during periods of high use which have typically been associated with holiday weekends such as Memorial Day, Fourth of July, and Labor Day. Over 1,000 people have been observed camping and riding OHV's within the WSA during Memorial Day weekend. Although holiday weekends are documented as the highest use periods, there has been a steady increase in use in OHV recreation activities observed throughout the year. There are three undeveloped camping areas located along the main road access to the Sand Dunes WSA. Concentrated use from vehicle parking has caused soil compaction and impacts to vegetation within these areas. These areas would continue to see high use during the holiday weekends. During these high-use periods the opportunity for solitude in these areas of the Sand Dunes WSA would not be present. Outside of the high-use periods there are opportunities for solitude and primitive recreation experiences in these areas, but activities such as agriculture and other uses on adjacent private lands would be a negative impact to some degree. Over time, there would be more pioneered trails leading into and out of the central dunes area from these camping areas. There are 7 miles of fence within the Sand Dunes WSA, including a fence along the west side of Fossil Lake which restricts OHV's from entering Fossil Lake from the central core area of the sand dunes. The Fossil Lake fence is noticeable on the flatter open terrain in the deflation basin on the very west portion of the WSA. However, this fence does not substantially effect the naturalness of the area.

Alternative B

Land identified in the 1991 "Wilderness Study Report" would not be added to existing WSA's under this alternative. There would be limited management actions available to provide protection for any wilderness values and characteristics. This alternative does not meet the management goals for potential wilderness resources.

Overall, potential impacts to wilderness values associated with the 12 WSA's within the LRA would not vary to any appreciable degree in comparison to Alternative A.

Alternative C

Under Alternative C, approximately 1,194 acres of acquired lands within or adjacent to three WSA's (Abert Rim—193 acres, Fish Creek Rim—397 acres, and Guano Creek—604 acres), were determined to have wilderness characteristics and are recommended as suitable for wilderness designation. Adding these areas to the existing WSA's would ensure that the wilderness characteristics and values are adequately protected by management under the wilderness IMP.

Under this alternative, the potential negative impacts to wilderness values from motorized uses within all of the WSA's would be lower than under either Alternatives A or B. All motorized and mechanical uses within WSA's under Alternative C would be limited to designated roads and ways; whereas under Alternatives A and B the motorized uses would be limited to existing roads and ways. The closure of the road into the garden, and the road from BLM Road 6179 to Derrick Cave would eliminate access on approximately 25 miles of roads within the Devils Garden WSA. The opportunity to experience solitude and naturalness and primitive recreation activities would be enhanced with these road closures.

Closure of the Sand Dunes WSA to all OHV's would have a positive impact on the potential opportunities for experiencing primitive recreation and improve visual and auditory solitude within the central core of the sand dunes. The opportunity for visual and auditory solitude would continue to be diminished toward the boundary areas of the WSA, because of sounds and visual impacts from human activities and development outside of the WSA. With the entire area designated as day-use only, the traditionally used camping areas along the main access road to the Sand Dunes would

eventually revegetate and signs of human uses would diminish. The existing pioneered trails leading into and out of the core dunes area would be obliterated over time from the movement of sand and natural revegetation. Additionally, the fence separating Fossil Lake from the central core area sand dunes would no longer be necessary and could be removed. This would improve the naturalness of the area as seen from the deflation basin located on the west portion of the WSA.

Alternative D

Under Alternative D, approximately 1,194 acres of acquired lands within or adjacent to three WSA's (Abert Rim—193 acres, Fish Creek Rim—397 acres, and Guano Creek—604 acres), were determined to have wilderness characteristics and are recommended as suitable for wilderness designation. Adding these areas to the existing WSA's would ensure that the wilderness characteristics and values are adequately protected by management under the wilderness IMP.

With the exception of Devils Garden and Sand Dunes WSA's, motorized and mechanical uses within WSA's under Alternative D would be limited to designated roads and ways. Road closures within the Devils Garden WSA would be the same as under Alternative C, and the Sand Dunes WSA would be designated open to OHV's as in Alternatives A and B. However, the total number of acres in the open designation would be decreased by 2,719 because the Fossil Lake Closure would be increased by a corresponding amount. Camping adjacent to the main access road to the Sand Dunes would be allowed to continue, but the use would be limited to specific areas on a rotational basis. Access into the central dunes areas would be limited to specific routes and existing pioneered trails would be closed. Over time, the naturalness of these camping areas would be improved.

Overall, the management actions proposed under Alternative D would have similar but slightly more positive effects on wilderness values in comparison to Alternatives A and B, whereas management actions proposed under Alternative C would have a greater positive effect on wilderness values in comparison to Alternative D.

Alternative E

Under Alternative E, the addition of 1,194 acres of acquired lands within or adjacent to Abert Rim, Fish Creek Rim, and Guano Creek, would be the same as under Alternatives C and D. Motorized and mechanical uses within WSA's under Alternative E would be limited to existing roads and ways, and the Sand Dunes WSA would be designated closed to OHV uses.

Overall, the potential effects on wilderness values from management actions proposed under Alternative E would be similar to Alternative C. Alternatives E and C would possibly have a slightly greater positive effect than under Alternatives A, B, or D because the Sand Dunes WSA would be designated open under Alternatives A, B, and D, and designated closed under Alternatives C and E.

Summary of Impacts

Overall, the management actions proposed under Alternative D would have similar effects on wilderness values in comparison to Alternatives A and B; whereas management actions proposed under Alternative C would have a greater positive effect on wilderness values in comparison to Alternative D.

Secondary, Indirect, and Cumulative Impacts

Addition of these lands to the existing WSA's land base would provide protection of the wilderness characteristics and values against future development and uses which would otherwise not be available without recommended designation as wilderness. Management of these areas would be guided by the wilderness IMP.

Wild and Scenic Rivers

Management Goal—*Protect and enhance outstandingly remarkable values of rivers determined to be administratively suitable for potential inclusion in the national wild and scenic river (WSR) system until Congress acts.*

Impact Analysis

Alternative A

Under this alternative, Guano Creek, Honey Creek, and Twelvemile Creek would not be recommended administratively suitable for inclusion in the national WSR system. Guano Creek is located within the Guano Creek WSA which provides protection of the outstandingly remarkable values under wilderness IMP. Potential designation of Guano Creek WSA by Congress as wilderness would provide a long-term level of protection. If Congress should act to release the Guano Creek WSA from consideration as a congressionally designated wilderness, the LRA would then revisit the process to make a determination if designation of

Guano Creek as part of the national WSR system would be necessary to protect the outstandingly remarkable values. As part of the Hart Mountain Jurisdictional Transfer, dated February 26, 1998, (and the Shirk Ranch Agreement, dated September 30, 1997), grazing is not authorized within the Guano Creek WSA which includes the Guano Creek study corridor. Potential designation of Guano Creek as part of the national WSR system would not appreciably increase the level of protection over the current level of protection provided under the wilderness IMP and the two agreements mentioned above. The most significant difference in the protections provided through potential wilderness designation and potential designation in the national WSR system is in power development. Under a wilderness designation, power development (e.g., dams) could be authorized by the President, whereas under a WSR designation, power development would be incompatible. The potential for power development within the Guano Creek corridor is considered to be very low. Motorized use within the Guano Creek corridor area is limited to existing roads and ways. There are two existing ways within the Guano Creek corridor, one parallels the stream along the upper 1.5 miles and the other parallels the stream along the last 1.0 mile. Under wilderness designation these ways would be closed to motorized use. Under the existing situation the potential negative impacts to the vegetative outstandingly remarkable values from motorized access is negligible.

Grazing is not authorized within the Honey Creek corridor with the exception for a water gap (water gap allows cattle access to water for a distance of approximately 100–150 feet along the stream). There are approximately 5.6 miles of BLM-administered public land along a 17-mile stretch of Honey Creek which starts at the Fremont National Forest boundary on the west and ends at Hart Lake in the east. This public land is interspersed with private land in a checkerboard pattern. Approximately 67 percent of the 17-mile segment is in private ownership. This checker board land ownership limits the ability to effectively manage stream resources and the same would hold true if Honey Creek was proposed for designation as part of the national WSR system. Designation in the national WSR system would not provide a significantly higher level of protection to the fisheries outstandingly remarkable values in Honey Creek which is not already available under the "Endangered Species Act." There is potential for development of power, but the physical suitability is unknown, and because of the rural and arid nature of the area, potential for power development is considered low. Recreational use of the area is very low. Water levels are generally too low for boating activities and there is minimal evidence of human use. The potential for negative impacts to the fisheries outstandingly remarkable values within Honey Creek from recreational uses, including motorized use, is negligible.

Designation in the national WSR system would not provide a significantly higher level of protection to the fisheries outstandingly remarkable values in Twelvemile Creek which is not already available under the "Endangered Species Act." Recreation uses within the Twelvemile Creek area are relatively low and the effects of these activities on the fisheries outstandingly remarkable values are negligible. Impacts from motorized uses would not be significant because access within the stream corridor is limited to three very rough, steep jeep trails (one is on private land). The potential for power development within Twelvemile Creek is considered low because of the rural and arid nature of the area. Grazing is not authorized within the Twelvemile Creek corridor—it is physically excluded by fencing. Although the fisheries outstandingly remarkable values are afforded adequate protection under the auspices of the "Endangered Species Act," should the Warner sucker be removed from the "Endangered Species Act" list, these protections would be diminished.

Alternative B

Under this alternative Guano Creek, Honey Creek, and Twelvemile Creek would not be recommended administratively suitable for inclusion in the national WSR system. OHV designations for each of these streams is the same as under Alternative A. Overall, there would not be a significant increase in the potential for negative effects to occur because of the existing laws, regulations, and policies which currently apply on each of the three creeks as described under Alternative A.

Alternative C

Under this alternative Guano Creek, Honey Creek, and Twelvemile Creek would be recommended administratively suitable for inclusion in the national WSR system. Guano Creek would be recommended suitable for potential designation by Congress with a tentative classification as wild. Honey Creek and Twelvemile Creek would be recommended suitable for potential designation by Congress with a tentative classification as scenic.

Under a wild classification, no power development would be allowed within Guano Creek. However, potential power development within Guano Creek is

considered low. Guano Creek is also located within the Guano Creek WSA and potential development within the stream corridor would be limited based on the WSA status and the future potential congressional designation as wilderness. No new mining claims and mineral leases would be allowed within 0.25 miles of the stream. There are no mining claims or oil and gas leases located near Guano Creek and the potential for locatable minerals is very low. Grazing is currently not authorized and would not be allowed with or without designation in the national WSR system. Recreational uses within the stream corridor is low and the restrictions on the development of recreation facilities within the stream corridor under the wild classification would not be necessary. Motorized travel on land and water could be permitted under the wild classification. However, access within the stream corridor under this alternative for WSA's would be limited to designated roads and ways and the potential for impacts from OHV use would be negligible to nonexistent. The way located at the lower stream reach near the Shirk Ranch would be closed to OHV travel. Because Guano Creek is located within the Guano Creek WSA, the vegetative outstandingly remarkable values are afforded a level of protection under wilderness IMP which is comparable to potential designation within the national WSR system. Additionally, the potential designation of Guano Creek WSA by Congress as wilderness would provide a long-term level of protection.

Under a scenic classification, for both Honey Creek and Twelvemile Creek, no power development would be allowed. However, potential power development within each of these creeks is considered to be low. Although mining claims and mineral leases would be allowed under a scenic designation, the mineral potential in each of these stream corridors is low—there are no existing mining or oil and gas leases located near these streams. The potential for negative impacts to these stream corridors from resource extraction activities would be negligible to nonexistent. Development of recreation facilities would be allowed within the stream corridors, but the recreation uses within these areas are so low that any development would not be economically feasible nor practical. Access to these stream corridors is limited and the potential negative impacts to the fisheries outstandingly remarkable values is negligible. Designation of Honey Creek and Twelvemile Creek as part of the national WSR system, with a potential classification as scenic, would not provide a significantly higher level of protection to the fisheries outstandingly remarkable values which is not already available under the "Endangered Species Act."

Alternative D

Under this alternative, Twelvemile Creek (6.6 miles) would be recommended administratively suitable for potential designation by Congress with a tentative classification as recreational. Honey Creek and Twelvemile Creek would both be recommended administratively not suitable for potential designation by Congress for inclusion in the national WSR system. The impacts associated with the nonsuitable recommendations for these creeks would be the same as listed under Alternative A.

Under a potential recreational designation on Twelvemile Creek, public use and access could be regulated, recreation facilities could be established within the stream corridor, forest practices would be allowed, mining could occur subject to existing regulations, rights-of-way (for transmission lines, natural gas, and waterlines, etc.), would be avoided or restricted to existing rights-of-way, and motorized uses would be permitted on land and water. Recreation and OHV (motorized uses) uses within the Twelvemile Creek area are relatively low and the effects of these activities on the fisheries outstandingly remarkable values are negligible. With the exception of 90 acres, all 6.6 miles (0.25 miles on either side of the stream) of Twelvemile Creek recommended for designation is in public ownership. Acquisition of this private parcel would benefit the fisheries outstandingly remarkable values, regardless of potential designation in the national WSR system.

The potential inclusion of Twelvemile Creek as part of the national WSR system under a recreational classification would provide an additional, although minimal, level of protection to the outstandingly remarkable values above the protections already provided under the "Endangered Species Act." However, should the Warner sucker be removed from the "Endangered Species Act" list, the protection afforded through the Act would no longer play a key role in the protection of the fisheries outstandingly remarkable values or associated habitat. Designation as part of the national WSR system would ensure a long-term level of protection relating to the outstandingly remarkable values regardless of any future role the "Endangered Species Act" would or would not play in protection of the fisheries. Although Twelvemile Creek was given a tentative classification as scenic under the eligibility assessment, the recreational classification would provide the needed level of protection of the outstandingly remarkable values, while allowing a greater level of flexibility in the management of the fish populations and habitat within the stream corridor. Designation of

Twelvemile Creek as a recreational river within the national WSR system would have a positive, but minimal, impact on the fisheries outstandingly remarkable values.

Alternative E

Under this alternative, none of the eligible streams would be recommended administratively suitable for potential designation by Congress as WSR's. The impacts to the outstandingly remarkable values for each of the streams would be the same as addressed under Alternatives A and B. Guano Creek would continue to be managed under the wilderness IMP and there would be no change in the management compared to the current situation. Management of Twelvemile Creek and Honey Creek corridors would continue to be avoided by the management prescriptions for the Warner sucker. No VRM class would be assigned to Twelvemile and Honey Creek—visual resources would be managed to allow natural processes to determine visual quality. Visual resources within Guano Creek would be managed under VRM Class I because of the WSA status. Overall, there would not be a significant increase in the potential for negative effects to occur because of the protections afforded by the existing laws, regulations, and management policies which are currently in place for each of the three creeks (wilderness IMP for Guano Creek, and the "Endangered Species Act" for Honey Creek and Twelvemile Creek).

Summary of Impacts

Under Alternatives A, B, and E none of the eligible streams would be recommended administratively suitable for potential designation by Congress as part of the national WSR system. Potential impacts to the outstandingly remarkable values associated with the three streams would be negligible without designation as part of the national WSR system because of the existing protections afforded them through the wilderness IMP and the "Endangered Species Act." Additionally, grazing is excluded from each these streams and the potential negative impacts on the outstandingly remarkable values from this activity is not an issue.

Under Alternative C, Guano Creek is proposed for designation with a tentative classification as wild, while Honey Creek and Twelvemile Creek are recommend for designation with a tentative classification as scenic. The potential positive impacts and protections afforded the outstandingly remarkable values through designation and inclusion in the national WSR system for Guano Creek as a wild river, and Honey Creek and Twelvemile Creek classified as scenic rivers would be negligible in comparison to the existing situation. Designation under a wild and/or scenic classification would provide protection against the possibility for hydropower development. However, the potential for hydropower development on all three streams is considered to be low. Additionally, given the protections provided the outstandingly remarkable values through the wildnerness IMP (Guano Creek) and the "Endangered Species Act" (Honey Creek and Twelvemile Creek), designation as part of the national WSR system would be provide little protection over and above what is currently in place.

Under Alternative D, only Twelvemile Creek would be administratively recommended as suitable for possible designation by Congress at a tentative classification as recreational. The added protection of designation as a recreational river in the national WSR system would have a slightly higher potential to positively impact the outstandingly remarkable values (fisheries) in comparison to Alternatives A, B, and E, and would be comparable to Alternative C, even though the tentative classification under Alternative C would be scenic. Inclusion in the national WSR system under a tentative classification of recreational would ensure long-term protection of the fisheries outstandingly remarkable values even if current protections under the "Endangered Species Act" would no longer be applicable. Alternative D, which provides protection of the outstandingly remarkable values under a tentative classification of recreational, is sufficient to meet the stated management goals for WSR's.

Secondary, Indirect, and Cumulative Impacts

Past water-resource related projects (i.e., reservoirs and water diversion structures) on Guano, Honey, and Twelvemile Creeks, have had an impact on each stream to varying degrees. On Guano Creek, Jacob's Reservoir, which is located above the study corridor, was constructed for irrigation purposes and has had an influence on the natural stream flows. There are several small reservoirs located upstream of the study corridor on Honey Creek, as well as several small diversion structures on private lands above and below the BLM-administered stream segments. There are also several diversion structures above and below the study corridor on Twelvemile Creek. Potential negative impacts to the ORV's from present or future projects or actions on lands within or adjacent to the study corridors would be considered to be negligible to nonexistent because of the existing protections under current laws, regulations, and policies, e.g., the wilderness IMP and possible ACEC designation (Guano Creek) and the "Endangered Species Act" (Honey and Twelvemile Creeks).

Cultural and Paleontological Resources

Management Goal 1—*Preserve and protect cultural resources in accordance with existing laws, regulations, and Executive orders, in consultation with Native Americans.*

Management Goal 2—*Increase the public's knowledge of, appreciation for, and sensitivity to cultural resources, Native American issues, and paleontological resources.*

Management Goal 3—*In consultation with local Native American Tribes, take actions, including designating areas of critical environmental concern (ACEC's), to protect traditional religious sites, landforms, burial sites, resources, and other areas of interest. Nominate as traditional cultural properties those areas that qualify.*

Assumptions

Some of the actions which are described in the alternatives may have either positive or beneficial impacts on cultural resources; some may have negative impacts which would have to be mitigated as required by Federal laws and regulations. Some impacts would be destructive and can not be mitigated (such as the destruction of a Native American traditional cultural property).

Significant cultural resource properties and Native American traditional cultural properties may be protected by various management strategies designed to preserve such sites for future scientific research, recreational uses, educational use, or Native American use. Examples of protected significant properties are the Abert Lake National Register District within the Lake Abert ACEC. Exclosures proposed by other programs such as wildlife and range, often protect cultural resources from cattle congregation and human vandalism. WSA and wilderness designations help restrict OHV use and add to the protection of sites.

Analysis of Impacts

Alternatives A—D

Impacts to cultural resources would generally be the same under all alternatives except Alternative E.

The management proposed for riparian zones to improve water quality and aquatic habitat while reducing soil erosion would benefit cultural resources. Restricting livestock grazing along streams, stabilizing stream banks, and closing roads in or near riparian areas would maintain or enhance conditions of archaeological sites in these areas.

The designation of SMA's such as RNA's, ACEC's, and WSR's generally would have a positive effect upon cultural resources and traditional cultural properties in those SMA's where management actions restrict detrimental uses. This would be accomplished by reduction or elimination of surface disturbances which are often caused by activities such as OHV use, grazing, construction of range improvements, rights-of-way placement, and mineral entry. Restricting these activities would result in increased ground cover leading to a reduction in soil erosion which would help to maintain the integrity of the cultural sites.

The most common, least expensive, and quickest form of mitigation of adverse effects is to cancel, relocate, or redesign a project to avoid cultural sites. This is easily done if the project is a fence or pipeline. On more complex projects such as highway construction, or on projects which can only be placed in one location, mitigation is more difficult. In these cases, the adverse effect is mitigated by scientific excavation and data collection by archaeologists. Such mitigation would always be done with consultation and coordination with Native American Tribes who might have an interest.

Negative impacts often outweigh beneficial ones, but can be mitigated. Livestock congregation and trampling can adversely affect cultural resources along streambanks and around springs. Looting of important sites is a continuing negative impact, and it is a criminal activity. Some people steal artifacts from public land and sell them for a profit, while others maintain private collections. Both actions impact the resource base.

When locatable minerals are mined under a plan of operation, provisions are made for inventory, evaluation, and sometimes mitigation of adverse effect to cultural resources. However, the notice of intent, which precedes a formal plan of operation, has a short timeframe and occasionally these limited operations have adverse impacts on cultural resources. The operator is still responsible if his activities damage archaeological properties and would be held accountable. Increased mining for locatable minerals could have adverse impacts upon archaeological resources

and traditional cultural properties. Any mining is governed by the regulations found at 43 CFR 3809. The regulations prohibit the "undue degradation" of the environment which might be used to prevent associated mining impacts. Another vehicle for the removal of impacts is to withdraw areas of importance from mineral entry; however, that is a difficult action, requiring secretarial or congressional approval and action.

OHV activities, particularly if unregulated, can have a negative impact upon cultural resources and traditional cultural properties. Alternatives A, B, and D would manage large parts of the planning area as open to OHV use would have the greatest impacts on cultural resources. Trails are created that cut and erode sites, scattering and breaking artifacts. The noise level and presence of people can impact the use of traditional cultural properties by Native Americans. In addition, as OHV's take people into generally unvisited or hard to reach areas, the integrity of prehistoric and historic sites is at risk to vandalism and collecting. Site vandalism and illegal excavation can increase in these instances.

Prescribed fires generally would not have an impact on cultural resources. Any flammable structures that could be damaged or destroyed would be protected or avoided. Fire management's policy is to avoid cultural sites, traditional cultural properties, and historic sites. However, in the case of wildland fire suppression, decisions must be made quickly, and occasionally, there is no time to consult with a cultural resource specialist about cultural values. As a result, cultural or historic sites may be damaged or destroyed. Fires of low intensity (amount of heat) generally have little or no effect on cultural resources unless heavy equipment is used to create firelines and firebreaks. Fire severity (duration of heating) can adversely affect prehistoric sites because extreme heat can damage stone tools and lithic debris on or near the sites surface. Rock art can be vulnerable to both fire intensity and severity on rock types subject to spalling and in areas with high fuel loadings. Fires of any type may expose hidden sites to increased visibility and illegal collection. Prehistoric, historic, and traditional cultural properties can also be damaged by fireline construction, particularly with heavy equipment.

Alternative E

The exclusion of grazing, construction of new range improvement projects, all mineral activity, new rights-of-way, and all other commercial uses would have an overall beneficial impact on cultural resources as this would eliminate the sources of much ground disturbing activity. Sites would not be disturbed and artifacts would be left intact. However, the planning area would still be open to dispersed recreation which would most likely result in continued impacts from site vandalism and illegal artifact collecting. This would be a significant negative impact to the integrity and scientific value of the sites.

Excluding all commodity production from the planning area would also have a negative impact on the cultural resources program itself. Almost all survey or inventory work on cultural resources that is done in the planning area is the result of doing clearance for ground disturbing projects. Since no new projects would be installed, there would be no need for clearances to be done and this source of information about cultural resources in the planning area would be essentially lost.

Summary of Impacts

The objectives for cultural/paleontological resources would be met under the alternatives to varied degrees. The short-term impacts of the proposed plan on cultural resources are projected to be positive for the cultural resource program objectives, historic property interpretation and stabilization, and for the preservation of traditional Native American uses.

The long-term impacts of the proposed plan on cultural resources are expected to be positive for all cultural resource objectives, including locating and protecting sites, increased opportunity for public education and enjoyment of cultural and paleontological resources via site interpretation, and systematic protection of traditional Native American land uses.

Secondary, Indirect, and Cumulative Impacts

Because cultural resources are location specific, fragile, and nonrenewable, adverse impacts are cumulative. For example, if there are 500 small lithic scatters in an area and 1 or 2 per year are lost to erosion, eventually none would exist. Likewise, each episode of vandalism diminishes the educational and scientific value of an archaeological site. Over time, the history and prehistory of an area may be completely lost.

Management Goal 4—*In order to fulfill trust responsibilities with Tribal Peoples, manage public land to maintain, restore, or enhance plant community health and cultural plants. Identify traditional ecological knowledge with humans as part of the ecosystem and maintain habitat integrity with sustainable yields at a landscape level.*

Analysis of Impacts

Alternative A

During the "National Environmental Policy Act" (NEPA) process for management actions on the land, insure that such actions would not contribute to the decline of cultural plants. Consultation with the different Tribes would be carried out concerning these cultural plants and juniper woodlands. On an as-needs basis, surveys for cultural properties would be conducted related to western juniper woodlands.

Impacts of any general ground-disturbing actions (usually not specifically covered by NEPA) such as grazing, OHV, rights-of-way, mineral exploration or development, wild horses, and in some cases, fire, would have a negative impacts on the cultural plants species because of disturbance and allowing competing weeds into the communities. Tables 2-36 and 2-37 in Chapter 2 list those plants and plant communities at risk from actions; however, most resource personnel are not aware of the plants nor the prioritized communities, and plants would be lost because of ignorance or insufficient training. Impacts from vegetation manipulation could have a negative effect if cultural plants are not included in the seed mixes for rehabilitation. Since few of these plants have available seed, other species would replace them, and in the case of using crested wheatgrass plantings, it would have an extremely negative effect. However, replanting of both native and introduced plant species would curb the invasion of competing weeds.

Alternative B

Most of the impacts would be the same as in Alternative A. However, the impacts to cultural plants would be slightly higher because of the increase in livestock and wild horse AUM's, especially in areas of spring use of low sagebrush and camas meadows or riparian areas. The increase of rangeland projects would spread the livestock into larger areas than Alternative A, which would slightly increase the possibility of impacts. The possibility of cogeneration plants using juniper wood would have a definite effect on the juniper communities—these would be covered by the NEPA process but would need special consultation with Tribal Peoples.

Alternative C

The proposal of eight ACEC's and land addition to an existing ACEC, especially for cultural plants, communities and resources, in this alternative would have a significant positive effect on the resources. These ACEC's would protect many of the plant communities identified by Tribal Peoples in the area. The decrease in AUM's for livestock and decreased number of range projects would have a positive effect on the plants and communities. Wild horses would have the same impact as in Alternative B. By limiting OHV use in the resource area to existing or designated roads and trails, the impact to cultural plants and communities would be lessened.

Limiting juniper harvesting in the ACEC's and elsewhere in the resource area would have a positive effect on the resources. An increase of Tribal input and education within the BLM would have a positive effect for management needs and direction.

Alternative D

The impacts for this alternative would be the same as Alternative C; however, the impact of open designation for OHV's and the increase of livestock AUM's would be the same as for Alternative A. The increase of wild horse numbers and AUM's creates an increased threat to cultural plants and communities within the herd areas.

Alternative E

This alternative would not create any ACEC's, and thus, would not have the extra management protection of these areas. Juniper would have increased protection with prohibition of wood and bough cutting.

Summary of Impacts

Alternatives A and B would generally have a negative impact on plant community health as it relates to cultural plants. Any clearances/protection of cultural plants would be done on a case-by-case basis. Consultation would still be carried out with the local Tribes. Only one ACEC providing protection and management of cultural plants would be designated.

Under Alternatives C and D, impacts to plant communities and cultural plants would be much more beneficial. Eight ACEC's would be designated in part to protect the traditional uses and values that are impor-

tant to local Tribes. Tribal Peoples would have access to traditional resources and use areas in these eight ACEC's and all management of these ACEC's would take these values into account.

Under Alternative E, no new ACEC's would be designated, therefore, this would preclude any special protection and management for cultural plants and traditional use areas. However, these resources would be generally protected since neither livestock grazing nor any other commercial activities would be allowed. Native Americans and others would still be able to harvest cultural plants; however, these plants would have no special protection or management. Long-term impacts on their continued existence would be uncertain.

Secondary, Indirect, and Cumulative Impacts

Designating areas as ACEC's and prescribing special management for those areas that contain resources and values that are important to local Tribes fulfills BLM responsibilities. This provides a means to establish better working relationships with the Tribes. Actions in Alternatives C and D set aside areas that, while they are still available for multiple use, are managed in part to help provide for and support traditional uses and needs of local Tribes. Areas that have traditional importance and use are quickly disappearing or being changed in many ways that are no longer compatible with Tribal uses. Designating these areas will help to assure that at least a few areas will survive unchanged for the foreseeable future.

Human Uses and Values

Management Goal—*Manage public lands to provide social and economic benefits to local residents, businesses, visitors, and future generations.*

Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires each Federal agency to make achievement of environmental justice part of its mission by identifying and addressing disproportionately high adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

Native Americans are a minority population of concern within the planning area because of historic and current uses of public lands for traditional cultural practices. This RMP contains alternatives which preclude collection of vegetative products for personal use within specific ACEC's and/or RNA's (see Areas of Critical Environmental Concern section and Table 3-3). Closure of these specific ACEC's to collection of vegetative products for personal use would reduce opportunities for all people equally. Native Americans would be disproportionately adversely impacted due to traditional uses of these products. Cultural resource values and traditional use areas would be protected in eight ACEC's, which are proposed in part to protect and manage cultural values and known Native American traditional use areas. Collection of vegetative products by Native Americans would be allowed to continue in these areas. Alternatives A, B, and E, which do not designate these ACEC's, would not protect these cultural resource values and traditional uses areas; however, collection of vegetative products is not precluded by these alternatives.

No other ethnic groups or low income population have been identified as being disproportionately adversely impacted.

Assumptions

Recreation use of BLM-managed lands generates local economic activity in several ways. Visitors to the area make purchases of food, fuel, lodging, and other goods and services from local businesses. Some businesses cater specifically to visitors and have special recreation permits for commercial uses of BLM-managed lands. Examples include all types if guide services and wilderness therapy schools.

Current visitation to developed sites on BLM-managed land is estimated at 117,500 annually (out of an estimated total annual visitation of 155,118 visitors). Future demand for recreation opportunities is expected to increase at about 4.0 percent annually. Population increases are the primary driver of this trend. The Oregon State Parks Department has projected annual growth rates for specific activities. Of particular concern in the Lakeview District is the projected increases in OHV use of 2.9 percent annually (Oregon State Parks and Recreation 1991).

The projected demand for recreation opportunities can be met in multiple places by multiple ownerships. Future management of lands and recreation sites would determine the attractiveness of these areas for specific types of recreation uses. This would determine the distribution of recreation between regions and across ownerships.

Analysis of Impacts

Alternative A

Agriculture and livestock use: Under Alternative A, forage availability is expected to continue at current levels. Overall, it is anticipated that total agricultural sales in Lake County would be approximately $20.9 million (based on 1998 sales in the county). Grazing fee collections would be approximately $146,116 annually if the current fee remains the same for the life of the plan.

Mineral resources: Alternative A continues existing mineral withdrawals for 13,400 acres. This would not change future development opportunities as discussed in Appendix N2 (reasonably foreseeable development scenarios) from the current situation. Continuation of the Public Sunstone Area would retain an important and unique recreational resource that contributes to tourism-related economic activity in the study area.

Under Alternative A, 433,790 acres would continue to be closed to leasing. These closures affect about 10 percent of lands with high potential. Also, 101,433 acres would continue to be subject to no-surface-occupancy stipulations. These stipulations affect 11 percent of acres with high mineral potential. The current management direction moderately limits opportunities for future mineral development as discussed in Appendix N2. In the event lands are eliminated from wilderness consideration by future congressional action, these lands would be reopened for mineral leasing unless constrained by other designations or specific closures. Necessary constraints would be implemented to protect resource values.

Alternative A continues present management of existing pits and quarries and allows for establishment of new sites in areas open to mineral material disposal. Under this alternative, 467,323 acres, encompassing existing ACEC's and WSA's, are closed to mineral material disposal. Several sites of high quality decorative stone and cinders are included within the closed acreage. This alternative identifies one potential site (Devils Garden) for establishment of a common use area if that particular area is dropped from wilderness consideration by future congressional actions. This alternative has a high level of lands available for mineral materials use. The current needs and anticipated future demands of both public users and county, state, and Federal agencies can be met under this alternative.

Forest and woodland resources: Alternative A does not declare an allowable sale quantity for the forest and woodlands within the resource area. Instead, commercial forest products would be a byproduct of management treatments designed to reduce overstocking, control competing vegetation, remove invasive juniper or white fir, reduce ground and understory ladder fuels, improve forest health, and increase resistance to insect and disease outbreaks and wildland fires.

Commercial and public wood cutting is an important existing use that would be used to address some forest and woodland treatment needs, especially in invasive juniper stands, in Alternative A. It is unlikely the demand for commercial and public wood cutting can completely address the identified need for treatment of invasive juniper stands over the life of the plan. Alternative A meets existing demand and anticipated future demand for commercial and public wood cutting opportunities. Other forest and woodland treatments (culturing, cutting, mechanical, thinning, and prescribed fire) are likely to provide employment opportunities to various contractors and seasonal employees. The extent of these employment opportunities is dependent of future funding of forest treatment activities.

Recreation resources: Alternative A develops tourism opportunities. Under this alternative, new recreation sites would be developed to meet increased recreation demand and to protect cultural and natural value and public health and safety. This alternative would meet current and future demands and would pursue opportunities to further expand recreation use and opportunities through developments, partnerships, and increases visitor information and education.

Motorized and mechanical vehicle use would be managed under open, limited to designated or existing roads and trails, and closed designations. The Sand Dunes WSA would be designated as open, allowing a significant recreational use to continue. Special recreation permits would be issued for organized events consistent with protection of resource values under this alternative. Existing and future demand for motorized vehicle use would be met under this alternative.

Special recreation permits would be issued under this alternative. Existing commercial recreational uses and organized recreational activities would continue. Existing guided uses and wilderness therapy schools would be able to use BLM-managed lands. Existing tourism-related firms would continue and have opportunities to expand in the future under this alternative.

Management of the Sunstone Collection Area would be continued under the existing guidelines. Future development of a primitive camping area in the vicinity would support additional visitor use in the area. Sunstone collection is a unique recreational opportunity within the LRA. No commercial uses would be permitted.

Federal agency activities: The business activities of the Federal government are not anticipated to change significantly under this alternative. With appropriated funding, current program emphasis would continue to generate local economic activity through direct Federal employment, local and regional purchases and contracting, and provision of commodities and recreational opportunities. The level of employment associated with restoration is expected to be unchanged.

Revenue sharing: None of the alternatives would result in significant changes in Federal ownership patterns in the study area. Payments-in-Lieu-of-Taxes are anticipated to increase due to Public Law 103-397, which authorized increased payments. Actual increases are dependent on congressional action to fund these authorized increases. Future land exchanges would be assessed to determine specific impacts—including impacts to Federal revenue sharing programs.

Conclusion: Underlying demographic trends would dominate future population and age distribution conditions within the study area. Alternative A maintains current levels of economic uses of the public lands. This includes economic activity associated with Federal grazing use, mining activity, recreation, and restoration. Alternative A maintains the current level of economic opportunity for future development. This includes potential for growth in mining and recreation.

Alternative B

Agriculture and livestock use: Under Alternative B, forage availability is expected to increase by 10,823 AUM's. Overall, it is anticipated that total agricultural sales in Lake county would increase by approximately $360,000 or 1.73 percent (based on 1998 sales in the county). Grazing fee collections would increase by approximately $14,611 if the current fee remains the same for the life of the plan.

Mineral resources: Alternative B opens an additional 4,440 acres to mining claim location through revocation of existing withdrawals. These areas include the current Public Sunstone Area (an area of high interest) and public water reserves (areas of low interest). These changes would not measurably change future development opportunities as discussed in Appendix N2. Revocation of the Public Sunstone Area would eliminate an important and unique recreational resource within the planning area, potentially reducing tourism-related economic activity in the study area.

Alternative B slightly increases acreage open to leases from the current situation. Approximately 18,000 acres in the Lake Abert Area would be available for leasing without special stipulations that currently preclude sodium development. This is an area of high potential. Closures under the alternative total 415,790 acres. These closures affect 36 percent of lands with high potential. Also, 105,108 acres are subject to no-surface-occupancy stipulations. These stipulations affect 52 percent of acres with high mineral potential. With exception of greatly increased opportunity for development of sodium leasing in the Lake Abert area, this alternative does not appreciably change future mineral development opportunities as discussed in Appendix N2.

Alternative B continues present management of existing pits and quarries and allows for establishment of new sites in areas open to mineral material disposal. This alternative identifies four specific sites for possible future community use areas. Under this alternative, 467,323 acres, encompassing existing ACEC's and WSA's are closed to mineral material disposal. Several sites of high quality decorative stone and cinders are included within the closed acreage. This alternative identifies three potential sites (Devils Garden, Squaw Ridge, and Four Craters) for establishment of a common use area if those particular areas are dropped from wilderness consideration by future congressional actions. This alternative has a high level of lands (about 85 percent) available for mineral materials use. The current needs and anticipated future demands of both public users and county, state and Federal agencies can be met under this alternative.

Forest and woodland resources: Alternative B does not declare an allowable sale quantity for the forest and woodlands within the resource area. Instead, commercial forest products would be a byproduct of management treatments designed to reduce overstocking, control competing vegetation, remove invasive juniper or white fir, reduce ground and understory ladder fuels, improve forest health, and increase resistance to insect and disease outbreaks and wildland fires.

Commercial and public wood cutting is an important existing use that would be used to address some forest and woodland treatment needs, especially in invasive

juniper stands, in Alternative B. It is unlikely the demand for commercial and public wood cutting can completely address the identified need for treatment of invasive juniper stands over the life of the plan. Alternative B meets existing demand and anticipated future demand for commercial and public wood cutting opportunities. Other forest and woodland treatments (culturing, cutting, mechanical, thinning, and prescribed fire) are likely to provide employment opportunities to various contractors and seasonal employees. The extent of these employment opportunities is dependent of future funding on forest treatment activities.

Recreation resources: Alternative B emphasizes the development of tourism opportunities. Under this alternative new recreation sites would be developed to meet increased recreation demand and to protect cultural and natural values and public health and safety. This alternative would meet current and future demands and would pursue opportunities to further expand recreation use and opportunities through developments and promotions.

Motorized and mechanical vehicle use would be managed under open, limited to designated or existing roads and trails, and closed designations. This alternative increased the area designated as open from the existing conditions, which may attract additional use from other ownerships (primarily USFS) and other regions which offer fewer opportunities for use in areas designated as open. The Sand Dunes WSA would be designated as open, allowing a significant recreational use to continue. Special recreation permits would be issued for organized events under this alternative.

Special recreation permits would be issued under this alternative. Existing commercial recreational uses and organized recreational activities would continue. Existing guided uses and wilderness therapy schools would be able to use BLM-managed lands. Existing tourism-related firms would continue. Existing and new firms would have opportunities to expand in the future under this alternative.

The Sunstone Collection Area would be managed to encourage commercial use through issuance of special recreation permits. Sunstone collection is a unique recreational opportunity within the LRA. Opportunities would exist to expand tourism-related businesses to include outfitting and guided tours for the collection of sunstones.

Federal agency activities: The business activities of the Federal government are anticipated to increase slightly under this alternative. With appropriated funding, program emphases would shift to generate local economic activity through increased provision of commodities and recreational opportunities. The level of employment associated with restoration is expected to be unchanged.

Revenue sharing: None of the alternatives would result in significant changes in Federal ownership patterns in the study area. Payments-in-Lieu-of-Taxes payments are anticipated to increase due to Public Law 103-397, which authorized increased payments. Actual increases are dependent on congressional action to fund these authorized increases. Future land exchanges would be assessed to determine specific impacts—including impacts to Federal revenue sharing programs.

Conclusion: Underlying demographic trends would dominate future population and age distribution conditions within the study area. Alternative B maintains current levels of economic uses of the public lands. This alternative also includes several proposals to enhance visitor services and access on public lands. Economic activity associated with visitors to public lands would increase. Alternative B maintains the current level of economic opportunity for future development. This is includes potential for growth in mining, livestock use, and recreation.

Alternative C

Agriculture and livestock use: Under Alternative C, forage availability is expected to decrease by 21,647 AUM's over the life of the plan. This would result in marginal to modest reductions in herd size for affected permittees, reducing productive capacity and sales. Overall it is anticipated that total sales in Lake County would be reduced by approximately 3.47 percent, or about $724,000 (based on 1998 sales in the county). Permittees who experience reductions in or loss of Federal grazing privileges would be required to restructure their existing operations to utilize existing private resources more efficiently or acquire new resources to replace those no longer provided by public lands. Changing the season of use would also require similar restructuring of livestock operations. Restructuring of this kind favors large, diversified agricultural operations with capital reserves or resources. Smaller, less diversified operations and operations relatively small privately-owned land bases would be at greater risk of foreclosure or bankruptcy. Grazing fee collections would decrease by approximately $29,223 if the current fee remains the same for the life of the plan.

Mineral resources: Alternative C continues existing mineral withdrawal for 13,400 acres and closes an additional 18,459 acres to mineral entry. These closures would moderately reduce future development opportunities as discussed in Appendix N2. Continuation of the Public Sunstone Area would retain an important and unique recreational resource that contributes to tourism-related economic activity in the study area.

Alternative C moderately decreases acreage open to leasing from the current situation. Closures under the alternative total 532,403 acres. These closures affect 98 percent of lands with high potential. Also, 119,460 acres are subject to no-surface-occupancy stipulations. These stipulations affect 1 percent of acres with high mineral potential. This alternative moderately reduces future mineral development opportunities as discussed in Appendix N2.

Alternative C continues present management of existing pits and quarries and allows for establishment of new sites in areas open to mineral material disposal. Under this alternative, 600,598 acres, encompassing existing and proposed ACEC's and WSA's, are closed to mineral material disposal. Several potential sites for high quality decorative stone and cinders are included within the closed acreage. This alternative reopens all areas dropped from wilderness consideration by future congressional actions to mineral material disposal on a case-by-case basis. This alternative has a high level of lands (about 82 percent) available for mineral materials use. The current needs and anticipated future demands of both public users and county, state, and Federal agencies can be met under this alternative.

Forest and woodland resources: Alternative C does not declare an allowable sale quantity for the forest and woodlands within the resource area. Instead, commercial forest products would be a byproduct of management treatments designed to reduce overstocking, control competing vegetation, remove invasive juniper or white fir, reduce ground and understory ladder fuels, improve forest health, and increase resistance to insect and disease outbreaks and wildland fires.

Commercial and public wood cutting is an important existing use that would be used to address some forest and woodland treatment needs, especially in invasive juniper stands, in Alternative C. It is unlikely the demand for commercial and public wood cutting can completely address the identified need for treatment of invasive juniper stands over the life of the plan. Alternative C meets existing demand and anticipated future demand for commercial and public wood cutting opportunities. Other forest and woodland treatments (culturing, cutting, mechanical, thinning, and prescribed fire) are likely to provide employment opportunities to various contractors and seasonal employees. The extent of these employment opportunities is dependent of future funding on forest treatment activities.

Recreation resources: Alternative C deemphasizes tourism opportunities. Under this alternative, minimal new recreation sites would be developed to provide visitor services. Opportunities for recreation in primitive and remote locations would occur unless resource values are being degraded beyond acceptable levels. Specific area closures and use limitations are proposed to protect resource values and human safety. Some current uses would no longer be allowed and future demand for developed site recreational opportunities would not be met by this alternative. This could marginally impact existing recreation-related businesses and limit future opportunities to develop recreational related businesses.

OHV use would be managed under open, limited to designated or existing roads and trails, and closed designations. The Sand Dunes WSA would be designated as closed, precluding a significant existing recreational use. Current visitation of 11,000 generates an estimated $263,000 of visitor spending locally and throughout the region (Johnson el al. 1995). Displacement of these visitors to sites outside the Christmas Valley area would eliminate local spending generated by these visitors. Special recreation permits would be issued for organized events under this alternative, but use would be limited to designated or existing roads and trails. Some existing visitation may be shifted to other ownerships (primarily forest service) in the area and to other regions which offer greater opportunities for use in areas designated as open.

Issuance of special recreation permits would be limited under this alternative. Existing guided uses and wilderness therapy schools would be able to use BLM-managed lands. Opportunities to develop new recreation related businesses would be reduced.

Management of the Sunstone Collection Area would be continued under the existing guidelines. No commercial uses would be permitted.

Federal agency activities: The business activities of the Federal government are anticipated to increase slightly under this alternative. With appropriated funding, program emphasis would shift to generate local economic activity through direct Federal employ-

ment, local and regional purchases and contracting, improved recreational opportunities, and restoration activities. Restoration activities are expected to increase under this alternative and have the potential to increase local employment. The extent is dependent on future budget allocations and the extent contracts used and additional Federal employees are hired to accomplish restoration objectives.

Revenue sharing: None of the alternatives would result in significant changes in Federal ownership patterns in the study area. Payments-in-Lieu-of-Taxes are anticipated to increase due to Public Law 103-397, which authorized increases in payments. Actual increases are dependent on congressional action to fund these authorized increases. Future land exchanges would be assessed to determine specific impacts—including impacts to Federal revenue sharing programs.

Conclusion: Underlying demographic trends would dominate future population and age distribution conditions within the study area. Alternative C decreases current levels of economic uses of the public lands. This alternative also includes several proposals to enhance visitor services and access on public lands. Economic activity associated with visitors to public lands would increase because of underlying population increases, but BLM would not provide new facilities or opportunities to attract additional recreational users to the area. Alternative C decreases the level of economic opportunity for future development. This includes decreased acreage available for mineral development, decreased livestock use authorizations, and limited availability of special use permits.

Alternative D

Agricultural and livestock use: Under Alternative D, forage availability is expected to continue at current levels. Overall, it is anticipated that total agricultural sales in Lake County would be approximately $20.9 million (based on 1998 sales in the county). Grazing fee collections would be approximately $146,116 annually if the current fee remains the same for the life of the plan.

Mineral resources: Alternative D continues existing mineral withdrawal for 13,400 acres and closes an additional 7,442 acres to mineral entry. These closures would slightly reduce future development opportunities as discussed in Append N2. Continuation of the Public Sunstone Area would retain and important and unique recreational resource that contributes to tourism-related economic activity in the study area.

Alternative D slightly decrease acreage open to leases from the current situation. Closures under the alternative total 440,232 acres. These closures affect 10 percent of lands with high or moderate potential. Also, 159,920 acres are subject to no-surface-occupancy stipulations. These stipulations affect 9 percent of acres with high or moderate mineral potential. This alternative does not appreciably change future mineral development opportunities as discussed in Appendix N2.

Alternative D continues present management of existing pits and quarries and allows for establishment of new sites in areas open to mineral material disposal. Under this alternative, 473,765 acres, encompassing existing ACEC's and WSA's, are closed to mineral material disposal. Several potential sites for high quality decorative stone and cinders are included within the closed acreage. This alternative reopens all areas dropped from wilderness consideration by future congressional actions to mineral material disposal on a case-by-case basis. This alternative has a high level of lands (about 85 percent) available for mineral materials use. The current needs and anticipated future demands of both public users and county, state and Federal agencies can be met under this alternative.

Forest and woodland resources: Alternative D does not declare an allowable sale quantity for the forest and woodlands within the resource area. Instead, commercial forest products would be a byproduct of management treatments designed to reduce overstocking, control competing vegetation, remove invasive juniper or white fir, reduce ground and understory ladder fuels, improve forest health, and increase resistance to insect and disease outbreaks and wildland fires.

Commercial and public wood cutting is an important existing use that would be used to address some forest and woodland treatment needs, especially in invasive juniper stands, in Alternative D. It is unlikely the demand for commercial and public wood cutting can completely address the identified need for treatment of invasive juniper stands over the life of the plan. Alternative D meets existing demand and anticipated future demand for commercial and public wood cutting opportunities. Other forest and woodland treatments (culturing, cutting, mechanical, thinning, and prescribed fire) are likely to provide employment opportunities to various contractors and seasonal employees. The extent of these employment opportunities is dependent of future funding of forest treatment activities.

Recreation resources: Alternative D develops tourism

opportunities when consistent with other resource objectives. Under this alternative, new recreation sites would be developed to meet increased recreation demand and to protect cultural and natural values and public health and safety. Alternative D develops tourism opportunities when consistent with other resource objectives. This alternative would meet current and future demands but would not pursue opportunities to further expand recreation use and opportunities through developments or promotions.

Motorized and mechanical vehicle use would be managed under open, limited to designated or existing roads and trails, and closed designations. The Sand Dunes WSA would be designated as open, allowing a significant recreational use to continue. Special recreation permits would be issued for organized events under this alternative, but use would be limited to designated or existing roads and trails. Some existing visitation may be shifted to other ownerships (primarily USFS) in the area and to other regions which offer greater opportunities for use in areas designated as open.

Special recreation permits would be issued under this alternative. Existing commercial recreational uses and organized recreational activities would continue. Existing guided uses and wilderness therapy schools would be able to use BLM-managed lands. Existing tourism-related firms would continue and have opportunities to expand in the future under this alternative.

Management of the Sunstone Collection Area would continue under the existing guidelines. Future development of a primitive camping area in the vicinity would support additional visitor use in the area. Sunstone collection is a unique recreational opportunity within the LRA. No commercial uses would be permitted.

Federal agency activities: The business activities of the Federal government are anticipated to increase slightly under this alternative. With appropriated funding, program emphasis would shift to generate local economic activity through direct Federal employment, local and regional purchases and contracting, improved recreational opportunities, and restoration activities. Restoration activities are expected to increase under this alternative and have the potential to increase local employment. The extent is dependent on future budget allocations and the extent contracts used and additional Federal employees are hired to accomplish restoration objectives.

Revenue sharing: None of the alternatives would result in significant changes in Federal ownership patterns in the study area. Payments-in-Lieu-of-Taxes are anticipated to increase due to Public Law 103-397 which authorized increases in payments. Actual increases are dependent on congressional action to fund these authorized increases. Future land exchanges would be assessed to determine specific impacts—including impacts to Federal revenue sharing programs.

Conclusion: Underlying demographic trends would dominate future population and age distribution conditions within the study area. Alternative D maintains current levels of economic uses of the public lands. This alternative also includes several proposals to enhance visitor services and access on public lands. Economic activity associated with visitors to public lands would increase. Alternative D decreases the level of economic opportunity for future mineral development. Future opportunties for development of commodity use and recreation opportunities would remain the same as the existing situation.

Alternative E

Agricultural and livestock use: Alternative E eliminates livestock use on BLM-managed lands. This would result in the loss of 108,234 AUM's with implementation of the plan. This would result in modest to significant reductions in herd size for affected permittees, reducing productive capacity and sales. Overall it is anticipated that total sales in Lake County would be reduced by approximately 17.34 percent, or about $3,621,000 (based on 1998 sales in the county). Permittees who experience loss of Federal grazing privileges would be required to restructure their existing operations to utilize existing private resources more efficiently or acquire new resources to replace those no longer provided by public lands. Grazing operators may also choose to use private resources more intensively. Restructuring of this kind favors large, diversified agricultural operations with capital reserves or resources. Smaller, less diversified operations and operations on relatively small privately-owned land bases would be at greater risk of foreclosure or bankruptcy. Grazing fee collections of $146,116 would be foregone under this alternative.

Mineral resources: Alternative E would withdraw the entire resource area from mineral entry, precluding any future development. Existing mineral claims would continue as valid existing rights. Revocation of the Public Sunstone Area would eliminate an important and unique recreational resource within the planning area, potentially reducing tourism-related economic activity in the study area.

Alternative E closes the entire resource area to mineral leasing and precludes future development of mineral resources. Existing mineral leases would continue as valid existing rights.

Alternative E closes existing pits and quarries and closes the entire resource area to mineral material disposal, except where required by law or where essential for critical road construction and emergencies to protect human safety. Current needs and anticipated future demands of both public users and county, state, and Federal agencies would not be met under this alternative. In particular, state and county agencies who receive material site rights-of-way and free use permits would face difficulty finding the mineral materials needed to build and maintain public roads. In addition, these agencies would face much higher costs when obtaining these materials from private sources. Mineral material site rights-of-way and free use permits would still be available on USFS and other Federal agency lands within the area.

Forest and woodland resources: Alternative E precludes all forest and woodland treatments, and thus, any auxiliary commercial products. Alternative E does not meet existing or anticipated future demand for commercial and public wood cutting. Forest and woodland treatment activities would not provide employment opportunities in the future.

Recreation resources: Alternative E deemphasizes tourism opportunities. Under this alternative, no new recreation sites would be developed to provide visitor services. Existing sites would be closed or rehabilitated. Opportunities for recreation in primitive and remote locations would occur unless resource values are being degraded beyond acceptable levels. Area closures would be the primary management response when necessary to protect resource values and human safety. Current and future demand for developed site recreational opportunities would not be met by this alternative.

The entire LRA would be limited to existing roads and trails except for 19,996 acres, including the Sand Dunes WSA which would be designated as closed, and 66,460 acres of deer winter range which would be limited to designated roads. No special recreation permits would be issued for organized events under this alternative. This alternative does not provide for existing levels and types of use and does not meet anticipated future demands for OHV use. Some existing visitation would be shifted to other ownerships (primarily USFS) in the area and to other regions which offer greater opportunities.

Special recreation permits would not be issued under this alternative. This precludes commercial recreational uses and organized recreational activities. Existing guided uses and wilderness therapy schools would be unable to use BLM-managed lands, negatively impacting existing recreation related firms.

Public use of the Sunstone Collection Area would be limited to surface collection. No commercial uses would be permitted.

Federal agency activities: The business activities of the Federal government are anticipated to decrease significantly under this alternative. With appropriated funding, program emphasis would shift to resource protection and enforcement. Local economic activity through direct Federal employment, local and regional purchases and contracting, recreational opportunities, and restoration activities would be reduced. Federal lands would no longer provide commodities for uses that generate economic activity. Mining, grazing, and special recreation permits would be curtailed. Forest and rangeland treatment would be limited to those necessary to protect human health and safety.

Revenue sharing: None of the alternatives would result in significant changes in Federal ownership patterns in the study area. Payments-in-Lieu-of-Taxes are anticipated to increase due to Public Law 103-397 which authorized increases in payments. Actual increases are dependent on congressional action to fund these authorized increases. Future land exchanges would be assessed to determine specific impacts—including impacts to Federal revenue sharing programs.

Conclusion: Alternative E, which would trigger employment losses and reduce opportunities for future economic growth associated with Federal land commodities, is expected to intensify pressures contributing to outmigration from the area.

Alternative E reduces opportunities for employment associated with restoration in the future. This is because of the focus on allowing natural processes to function and determine the rate of improvement.

Alternative E reduces opportunities for developed site recreation and OHV use. Underlying growth trends for visitor use would continue; however, management actions would not be responsive to this demand. OHV designations would seriously reduce the amount and quality of opportunities for OHV use. Users would be displaced to other area of the state or to other ownerships such as USFS lands. Some users would no longer participate in the activity due to longer travel

times to suitable sites.

Alternative E maintains existing levels of mining use on public lands. Valid existing rights (mineral leases and mining claims) would continue. Closure of the remaining acres to leasing and mineral entry precludes opportunities for future mineral development. Opportunities for energy and mineral development would remain on private lands in the area.

Summary of Impacts

Under Alternatives A, B, C, and D, underlying demographic and regional and national economic trends will be the primary determinants of economic activity in the future. Alternative E disrupts existing uses on public lands and precludes future development of mineral resources. This would reduce existing levels of economic activity and negatively impact future economic growth in the study area.

Recreation growth in the area is expected to continue. The BLM will continue to provide developed and dispersed recreational opportunities on its lands under Alternatives A through D. Alternative B particularly emphasizes economic activities on public lands through the increased emphasis on special use permits and site development. The future economic impact of recreation in the study area is highly dependent on the ability of local businesses to provide goods and services demanded by existing and additional visitors. Alternative E does not address the existing levels or future demand of recreationists.

The impacts to the livestock sector of the economy vary by alternative. Alternatives A and D continue to provide existing levels of Federal forage. No changes in economic activity are anticipated under Alternatives A and D. Alternative B slightly expands livestock use on BLM allotments. This creates additional economic opportunities for affected permittees. Alternative C would negatively affect the livestock sector in Lake County by reducing forage availability. Impacts are anticipated to be moderate overall with some permittees experiencing significant reductions. Alternative E eliminated all grazing of BLM lands. Impacts are anticipated to be severe overall with all BLM permittees experiencing the elimination of current permitted use.

None of the alternatives will impact existing levels of mineral activity, because existing mineral claims and leases are unaffected by the alternatives. The alternatives impact the potential for future development and associated economic activity. Alternatives C and E severely reduce or eliminate the potential for future development through closure and withdrawal of lands to leasing and mineral entry. Alternative B has a high impact on future mineral leasing through closures and no-surface-occupancy stipulations on significant percentages of lands with high potential. Alternative D has a moderate impact on future mineral leasing through closures and no-surface-occupancy stipulations on lands with high potential. Alternative A continues the present situation.

Secondary, Indirect, and Cumulative Impacts

Anticipated recreational growth will increase the demand for recreation across all ownerships. Alternatives which close lands to OHV use or close developed facilities will cause demand to be shifted to other ownerships, in particular to lands managed by the USFS. With expanding recreation demand, opportunities exist for private sector business growth to meet the increasing demand for recreational opportunities, especially for developed sites (campgrounds).

Reduced AUM's in Alternatives C and E would place additional grazing pressure on private lands and/or increase the demand for hay and other forage alternatives. Other public lands, in particular the USFS, are not anticipated to increase grazing use as a result of increased demand for alternative forage.

The BLM is not a major contributor to economic activity in the lumber and wood products sector, and the alternatives do not change this. In the future, increased juniper utilization could reduce the costs and increase the feasibility of certain landscape treatments proposed under Alternatives A–D.

Air Quality

Management Goal—*Meet the national ambient air quality standards as described in the "Clean Air Act" (CAA) and follow the direction and requirements of the Southcentral Oregon Fire Management Partnership.*

Assumptions

- The national ambient air quality standards and "Oregon Smoke Management Plan" would not become more stringent.
- The maximum number of acres of prescribe fire are ignited for each alternative over a 10-year span.

- The acres of potential wildland fire are the same as stated in the Fire Management impacts.
- The amount of particulate matter (PM) and direction of smoke dispersion can be managed in prescribe fire, but not wildland fire.

Analysis of Impacts

Alternative A

This alternative has the potential to put between 5,000–7,500 tons of particulate matter into the atmosphere over a 10-year period from wildland fire. Another 10,000 tons of particulate matter could be produced by prescribe fire.

Alternative B

This alternative has the potential to put between 6,250–8,750 tons of particulate matter into the atmosphere over a 10-year period from wildland fire. Another 16,000 tons of particulate matter could be produced by prescribe fire.

Alternative C

This alternative has the potential to put between 7,500–15,000 tons of particulate matter into the atmosphere over a 10-year period from wildland fire. Another 32,000 tons of particulate matter could be produced by prescribe fire.

Alternative D

This alternative has the potential to put between 7,500–15,000 tons of particulate matter into the atmosphere over a 10-year period from wildland fire. Another 24,000 tons of particulate matter could be produced by prescribe fire.

Alternative E

This alternative has the potential to put between 10,000–20,000 tons of particulate matter into the atmosphere over a ten-year period from wildland fire. No prescribe fire would be done.

Summary of Impacts

The alternatives all would emit varying amounts of particulate matter, but because of the ability to manage emissions in prescribe fire, the air quality goal should be met. Wildland fire is a random event and the alternatives with larger amounts of particulate emissions have the potential to exceed the stated management goal of air quality. But due to the relative isolation of the area and the predominant wind patterns for smoke dispersion, the probability is low to degrade the airshed.

Secondary, Indirect, and Cumulative Impacts

Smoke from prescribed or wildland fires burning simultaneously on the adjacent national forests—Modoc, Fremont, Winema, Deschutes—and adjacent BLM districts—Alturas Field Office, Surprise Field Office, Burns District, and Prineville Districts—and on private and state lands, would have a significant impact on the air quality of southcentral Oregon. Prevailing winds in the area are south and southwesterly. As a result, multiple fires could degrade air quality in north Lake County and the Bend, Prineville, and Burns areas. It is not likely that several prescribed fires would occur at the same time since burn plans are coordinated with other BLM, USFS and Oregon Department of Forestry (ODF) offices. However, large wildland fires or escaped prescribed fires could occur in a number of areas at one time resulting in significant air quality degradation.

Fire Management

Management Goal 1—*Provide an appropriate management response on all wildland fires with emphasis on firefighter and public safety. When assigning priorities, decisions would be based on relative values to be protected commensurate with fire management costs.*

Assumptions

The most efficient level of suppression resources is funded over the time period being assessed. The acres burned assumptions are from the latest initial attack analyzer (IIAA) calculations.

Human life (firefighter and public safety) is highest priority during a wildland fire. Once firefighters have been assigned to a fire, their safety becomes the highest value to be protected. Property and natural and cultural resources are secondary priorities.

For Alternatives A, B, C, and D, prescribed fire acres refer to those areas included in an environmental analysis; it does not assume that 100 percent of those acres are burned by the fire. In treating areas, the intent is to actually burn approximately 40–70 percent,

and keep 30–60 percent unburned. A goal of landscape-level prescribed fire treatments is to break up burned and unburned areas to result in a mosaic effect. The acres listed in the alternatives are upper limits, and not targets. For Alternatives C and D, wildland fire use may cause the number of treated acres to vary widely from year to year, and in some years may accomplish a very large number of treated acres. Lightning-caused fires in excess of 100,000 acres have occurred periodically in the rangeland fuels on the LRA.

Analysis of Impacts

Alternatives A and B

Firefighter and public safety is maximized in these alternatives because of the ability to attack fires when small and the use of direct tactics. The time spent on individual fires is reduced, minimizing exposure and fatigue. Aerial resources are not utilized as often or for as long of a duration. The percentage of large fires is smaller and public exposure is minimized. Large fire costs and resource damage would be smallest of the alternatives. Potentially 100,000–150,000 acres could be burned by wildland fire over a 10-year period in Alternative A, and 125,000–175,000 acres in Alternative B.

Alternatives C, D, and E

Firefighter safety is compromised due to the large size of fires when action is taken. Public safety is compromised due to large fires burning unchecked. Large fires take longer to extinguish, which leads to more exposure time for firefighters. More aerial resources would be used and for longer durations. A higher percentage of fire starts would become large incidents. Total fire costs and resource damages would be much higher. About 150,000–300,000 acres could be burned by wildland fire over a 10-year period in Alternatives C and D, and 200,000–400,000 acres in Alternative E.

Management Goal 2—*Rehabilitate burned areas to mitigate the adverse effects of wildland fire on soil and vegetation in a cost-effective manner and to minimize the possibility of wildland fire occurrences or invasion of weeds.*

Analysis of Impacts

Alternative A

This alternative would be the most cost effective over the short term, except for Alternative E. Rehabilitation would be on an as-needed basis and the acres burned would be the smallest.

Alternative B

More acres would be rehabilitated than under Alternative A. All wildland fires would be rehabilitated with emphasis on forage production. In the long term, rehabilitation would benefit upland vegetation, wildlife habitats, and soil and watershed conditions by increasing species diversity and improving ground cover.

Alternatives C and D

The costs would be higher in these alternatives due to the amount of acreage burned. The acres of ground disturbed would also allow for the invasion of weeds. The conversion to a short fire regime would allow for more wildland fire occurrence.

Alternative E

No rehabilitation would occur under this alternative. Any rehabilitation of wildland fire would be the result of natural processes.

Management Goal 3—*Restore and maintain ecosystems consistent with land uses and historic fire regimes through wildland fire use and prescribed fire. Reduce areas of high fuel loading resulting from years of fire suppression that may contribute to extreme fire behavior.*

Assumptions

- The funding levels for prescribe fire would be sufficient to treat the acres called for.
- Air quality regulations would not become so stringent as to hamper the program.
- The number of qualified people available would be sufficient to carry out the program.

Analysis of Impacts

Alternative A

The number of acres that are converted to a historic fire regime and the reduction of high fuel loadings are small in this alternative. The option to manage fires in the Fort Rock Fire Management Area is still available. This option has the potential to save thousands of dollars in suppression costs.

Alternative B

The number of acres that are converted to a historic fire regime and the reduction of high fuel loadings would be larger than Alternative A in this alternative. The areas that may need the most treatment to reach the stated management goals may not be the same acres that are treated for forage and commodity production. The option to manage fires in the Fort Rock Fire Management Area would not be available. Loss of this option would potentially cost thousands of dollars in suppression costs and tie up resources that could be available for higher priority fires.

Alternative C and D

These alternatives would treat the most acres to meet the stated management goals. Areas designated for wildland fire use would have to have easily defendable boundaries. Prescribe fire would be the preferred method of restoration but would not be nearly as cost effective as wildland fire use. With the large amount of burned acres, the potential for an escaped fire increases, as does the potential for noxious weed establishment.

Alternative E

This alternative would slowly meet the above objectives for restoring historic fire regimes, unless nonnative short-interval species were to establish. But the reduction of high fuel loadings would be a random event and the resulting high intensity fire behavior would most probably change the historic fire regime.

Summary of Impacts

Alternatives A and B provide the highest safety for firefighters and the public, and the costs of firefighting and fire rehabilitation are the lowest (with Alternative A lower than Alternative B because of the Fort Rock Fire Management Area). The availability of burned area is the smallest for the invasion of weeds. The restoration of fire regimes and reduction of fuel loading would take longer.

Alternatives C, D, and E rate lower over the life of the plan for firefighter and public safety. This could change, as fire regimes and fuel loadings are changed. The costs for suppression and rehabilitation would increase over the over the life of the plan as more acres would be burned. The chances for escapes of prescribe and wildland fire use would increase. The air quality could be impacted due to the large volume of burning. Alternatives C and D would restore the historic fire regime sooner with the availability of prescribed fire. The randomness and variability of fire occurrence in Alternative E would hamper ecosystem restoration and the lack of rehabilitation could lead to the dominance of nonnative short-interval species.

Secondary, Indirect, and Cumulative Impacts

Increased use of prescribed fire and wildland fire use would ultimately result in smaller and fewer wildland fires due to reduced fuel loadings. Fire severity and intensity would also be reduced. These actions would also begin to include fire as part of natural ecosystem processes and result in more natural potential vegetation groups across the landscape. Since prescribed fires and wildland fire use would also be occurring on the adjacent Fremont National Forests, Hart Mountain and Sheldon National Wildlife Refuges, and adjacent BLM districts, a more natural form of wildland fire in the ecosystem would begin to occur not just in the planning area but over several million acres in southeast Oregon.

Recreation Resources

Management Goal—*Provide and enhance developed and undeveloped recreation opportunities, while protecting resources, to manage the increasing demand for resource-dependent recreation activities.*

Impact Analysis

Alternative A

Management actions aimed at protecting, restoring, or enhancing watershed functions, riparian/wetland areas, vegetative communities, wildlife habitats and wildlife populations, and forest health and biodiversity would not create significant effects on recreation. In some instances, recreation may benefit from these actions by increasing aesthetic values and through increased fish and wildlife populations providing opportunities for wildlife viewing and enhancing sport fishing and hunting. Area or road closures would have minimal negative effects on dispersed recreation because they would typically be on a site-specific basis.

Management actions relating to the extraction of mineral materials, oil and gas and geothermal exploration, and the development and production of locatable minerals would have minimal effects on recreation.

Negative effects on recreation relating to land acquisitions, the issuance of rights-of-way, leases, and permits would not be significant.

The creation of SMA's such as ACEC's and RNA's could negatively affect dispersed recreation activities through restrictions on activities such as camping, firewood gathering, and through area and road closures.

Restriction of access in the mule deer winter range in north Lake County would have minimal negative effects on dispersed recreation and may provide greater opportunities of solitude for hikers and crosscountry skiers during periods of adequate snow.

Recreation may be negatively impacted from management actions relating to the maintenance, restoration, and protection of populations and habitats for special status plant and animal species. The degree of the effects on recreation would be dependent on the intensity of the actions. In particular, management actions initiated for the protection of greater sage-grouse and habitat, may potentially have negative effects on dispersed recreation because of area and road closures. Hunting would be the recreation activity with the greatest potential to be negatively impacted. Habitat of the types which are crucial to the various life stages of the greater sage-grouse are known to occur over large areas of the LRA.

Actions initiated to protect cultural resources would have minimal negative impacts on recreation. Any restrictions, such as area or road closures, would typically be on a site-specific basis. Opportunities for interpretation and permitted commercial tours may exist which would positively affect recreation. Through interpretation and education, resource degradation may be mitigated by public awareness and appreciation gained for these valuable resources.

Wilderness therapy schools operating in the LRA create conflicts with other users of public lands and ranchers/residents, and damage roads on a seasonal basis. Hunters would be the primary recreation user group to be negatively impacted. However, the impacts are confined to localized areas where the therapy groups are authorized to camp and the overall negative effects on hunters would be nonsignificant. In north Lake County, wilderness therapy schools are authorized to utilize 29 campsites within an area covering approximately 230 square miles east of Fredericks Butte Road. Given established group size limitations and limits on the number of groups authorized to operate within this area, the maximum number of campsites used at any one time would be five.

There have been conflicts between ranchers/residents living in the north Lake County area where three wilderness therapy companies have conducted operations in the past. Runaway students have been the focal point of concern for many of these ranchers/residents. To reduce the potential for future conflicts relating to runaway students, there have been a number of permit stipulations initiated. When possible, wilderness therapy groups have been moved at least 5 miles from any year-round residents/ranches, there must be a minimum of one staff member for each three students, and a runaway protocol was initiated to notify ranchers/residents of runaways.

During periods when roads are wet there is a potential for resource impacts to occur. The impacts to roads are typically confined to the late fall, winter, and early spring seasons.

Alternative B

Actions to protect, restore, or enhance watershed functions, riparian/wetland areas, vegetative communities, wildlife habitats and populations would not increase significantly compared to the current situation. Overall, these actions would improve aesthetic values while increasing fish and wildlife populations providing opportunities for wildlife viewing and enhancing sport fishing and hunting. Negative effects to recreation based on actions to improve forest health and biodiversity may increase slightly over the current situation because the size and number of juniper treatment stands would be maximized. However, these impacts would typically be short-term and site-specific during periods of rehabilitation and revegatation.

There would be no appreciable difference in impacts to recreation from management actions relating to the issuance of rights-of-way, leases, and permits compared to the current situation. Greater emphasis on acquisition of lands with high recreational values would enhance recreation opportunities in comparison to the current situation.

Impacts to recreation relating to the extraction of mineral materials, oil and gas and geothermal exploration, and the development and production of locatable minerals would not change appreciably from the current situation except for recreational sunstone collecting. The proposal to revoke the mineral segregation and allow mining claim location on the Public Sunstone Area would create significant negative effects on recreational collection of sunstone because any

claims would prohibit access by the public.

Actions relating to the maintenance, restoration, and protection of populations and habitats for special status plant and animal species would not differ appreciably in comparison to the current situation. The negative effects on recreation should be minimal. However, to accurately predict the level of significance of any actions would be dependent on the intensity and duration of the proposed actions.

Impacts associated with management actions under this alternative, which are aimed at maintaining, restoring, and enhancing wildlife and wildlife habitats, would not vary to any appreciable degree from the current situation. Improving habitats for game and nongame animals would have a positive impact on recreation by increasing wildlife viewing opportunities as well as providing for quality sport hunting opportunities. Management actions could include restricting access and area closures. These actions would have a negative impact on nonmotorized and motorized recreation activities, with the greatest negative impact to motorized recreational activities.

With no change in the mule deer winter range closure in north Lake County the impacts on recreation activities would be the same as under the current situation.

Management actions proposed under this alternative for the protection and improvement of fish habitats would continue to enhance sport fishing opportunities, while possible area or road closures would negatively impact dispersed recreation activities.

The impacts to recreation from management actions aimed at protection of special status animal species would potentially be the same as for actions proposed under the current situation. Management actions initiated to protect greater sage-grouse and habitat, would continue to have a negative impact on motorized and nonmotorized recreation because of area and road closures. The significance of the impacts would be dependent on the degree or level of the restrictions imposed through specific management actions.

Impacts to recreation relating to the protection of cultural resources would be similar in comparison to the current situation. Overall, negative impacts would be minimal because area and road closures initiated to protect cultural resources would typically be on a site-specific basis. Access to cultural sites for interpretation and education purposes would be given greater emphasis under this alternative compared to the current situation and there would be a corresponding increase in the positive effects on tourism and the economy of local communities.

Under this alternative, the total number of authorized user days for wilderness therapy operations would be 16,400, a decrease of 200 user days compared to the current situation. Of this total, 8,300 user days would be available for use within the north Lake County area and the remainder (8,100) would be available for use in other areas of the LRA. The total number of groups authorized to operate at any one time in the north Lake County area (five groups) would not change from the current situation. The number of authorized campsites in north Lake County would not vary appreciably from the number currently authorized (29). Given the proposed use levels and group limitations, the level and type of potential impacts associated with wilderness therapy operations under this alternative would be similar in comparison to the current situation.

Alternative C

Impacts on recreation relating to actions to protect, restore, or enhance watershed functions, riparian/wetland areas, vegetative communities, wildlife habitats and populations would not vary significantly from Alternatives A and B under this alternative. Negative effects to recreation based on actions to improve forest health and biodiversity would be lower in comparison to Alternative B (only 50 percent of the invasive juniper stands would be treated under Alternative C, whereas 75 percent would be treated under Alternative B, and commercial and public wood cutting would be maximized). Again, any impacts would typically be short-term and site-specific during periods of rehabilitation and revegatation.

There would be no appreciable difference in impacts to recreation from management actions relating to the issuance of rights-of-way, leases, and permits in comparison to Alternatives A and B. Similar to Alternative B, recreation opportunities would be enhanced with an emphasis on the acquisition of lands with a high public value.

Designation of 134,214 acres as new SMA's (e.g., ACEC's) would preclude the extraction of mineral materials, oil and gas and geothermal exploration, and development and production of locatable minerals would result in slightly lower negative effects to recreation under this alternative in comparison to Alternatives A and B. The mineral segregation on the Public Sunstone Area would be retained under this alternative which would allow public use. There would be no negative effects on recreational collection of

sunstone as is the case under Alternative B.

Actions relating to the maintenance, restoration, and protection of populations and habitats for special status plant and animal species would not differ appreciably in comparison to either Alternative A or B. The significance of any actions would be dependent on the intensity and duration of the proposed actions.

Impacts associated with management actions under this alternative which are aimed at maintaining, restoring, and enhancing wildlife and wildlife habitats, would not vary to any appreciable degree in comparison to Alternatives A and B.

Approximately 35,300 acres would be added to the deer winter range closure located in north Lake County. The dispersed recreation activities such as hiking and crosscountry skiing would be enhanced with increased opportunities for solitude. The Northern Wildlife Area would restrict access to existing roads and trails within 275,463 acres in the northern portion of the North Lake County Special Recreation Management Area. These restrictions would have both negative and positive effects on dispersed recreation activities. Access would be restricted for motorized recreation activities, but nonmotorized recreationists would have a greater opportunity to experience solitude. There would be greater negative effects on recreation under this alternative compared to either Alternative A or B, because of the increased restrictions for wildlife protection on over 300,000 acres.

Management actions proposed under this alternative for the protection and improvement of fish habitats would continue to enhance sport fishing opportunities as under Alternatives A and B.

Management actions intended to protect special status animal species would have impacts similar to Alternatives A and B. Actions which would be initiated to protect greater sage-grouse and crucial habitat would be the same as under Alternatives A and B—any impacts to recreation activities would be dependent on the degree or level of the restrictions imposed.

Impacts to recreation relating to actions for the protection of cultural resources under this alternative would not vary from Alternatives A and B.

The total number of authorized user days (10,200) for wilderness therapy operations resource area-wide under this alternative would be 6,400 less than under Alternative A, and 6,200 less than under Alternative B. Of the total available user days, 4,800 user days would be authorized within the North Lake County Special Recreation Management Area–a decrease of 3,500 user days within the North Lake County Special Recreation Management Area in comparison to Alternative B. There would be 5,400 user days available for the remainder of the resource area—a decrease of 2,700 compared to Alternative B. Under Alternative A, the total number of user days (16,600) were not split between North Lake County Special Recreation Management Area and the remainder of the resource area. Considering group and group size limitations, upwards of 13,500 user days could be utilized in North Lake County Special Recreation Management Area under Alternative A, whereas under Alternative C, approximately 8,700 could be utilized. Only four groups would be authorized to operate within North Lake County Special Recreation Management Area at any one time under Alternative C, one less than would be allowed under Alternatives A and B. The number of authorized campsites under this alternative would not vary from Alternatives A and B.

Negative impacts to other user groups within the North Lake County Special Recreation Management Area under this alternative would be significantly less than under Alternatives A and B. The level of potential negative impacts to other user groups from wilderness therapy operations in the remainder of the resource area would be higher under Alternatives A and B in comparison to Alternative C because of the higher number of available user days. Because of the seasonal use limitations within the North Lake County Special Recreation Management Area under this alternative, the potential for damage to roads would be significantly less than compared to Alternatives A and B. There is a higher potential for negative impacts to roads in the remainder of the resource area because there would be no seasonal limitation on wilderness therapy operations.

Under this alternative, overnight camping would not be allowed in the Lost Forest/Sand Dunes/Fossil Lake ACEC (35,566 acres), Juniper Mountain ACEC (6,334 acres), Black Hills ACEC (3,048 acres), Connley Hills ACEC (3,675 acres), and Table Rock ACEC (5,073) acres. Additionally, the Lost Forest/Sand Dunes/Fossil Lake ACEC would be closed to OHV's. The restrictions within the Lost Forest/Sand Dunes/Fossil Lake would have the greatest negative effect on motorized recreation uses. This area has traditionally received the highest concentration of recreational use in the LRA because of the OHV use of the sand dunes within Sand Dunes WSA. The no camping restrictions within the Juniper Mountain, Black Hills, Connley Hills, and Table Rock ACEC's would not have a significant

negative effect on recreation because overnight camping opportunities exist adjacent to the boundaries of the ACEC's. Hunters would be the user group most impacted because primitive hunting camps which have historically been used would no longer be accessible. The overall negative effects on recreation under this alternative would be greater than under Alternatives A and B because of these restrictions, especially in relation to the Lost Forest/Sand Dunes/Fossil Lake ACEC.

Alternative D

Impacts on recreation relating to actions to protect, restore, or enhance watershed functions, riparian/wetland areas, vegetative communities, wildlife habitats and populations would not vary significantly from Alternatives A, B, and C. Negative effects to recreation based on actions to improve forest health and biodiversity would be lower in comparison to Alternative B, but similar to Alternative C. Again, any impacts would typically be short-term and site-specific during periods of rehabilitation and revegatation.

There would be no appreciable difference in impacts to recreation from management actions relating to the issuance of rights-of-way, leases, and permits in comparison to Alternatives A, B, and C.

Effects on recreation from the extraction of mineral materials, oil and gas and geothermal exploration, and development and production of locatable minerals under Alternative D would be similar to Alternatives A and B, but slightly higher than under Alternative C, which closes most ACEC's to mineral leasing. The mineral segregation on the Public Sunstone Area would be retained under this alternative and there would be no negative effects on recreational collection of sunstone as is the case under Alternative B.

Actions relating to the maintenance, restoration, and protection of populations and habitats for special status plant and animal species would not differ appreciably in comparison to Alternatives A, B, and C. The significance of any actions would be dependent on the intensity and duration of the proposed actions.

Impacts associated with management actions under this alternative which are implemented to maintain, restore, and enhance wildlife and wildlife habitats, would not vary to any appreciable degree in comparison to Alternatives A, B, and C.

Impacts to recreation relating to the deer winter range and the Northern Wildlife Area would be the same as described under Alternative C.

Management actions proposed under this alternative for the protection and improvement of fish habitats would continue to enhance sport fishing opportunities and would not differ from Alternatives A, B, and C.

Management actions intended to protect special status animal species would be the same as described under Alternatives A, B, and C.

Impacts to recreation relating to actions taken to protect cultural resources would not vary from Alternatives A, B, and C.

The total number of authorized user days for wilderness therapy operations resource area-wide under this alternative would be 12,800. This would be 3,800 user days less than Alternative A, 3,600 user days less than Alternative B, and 600 user days more than Alternative C. Of the total (12,800) available user days, 7,400 user days would be authorized within the North Lake County Special Recreation Management Area. Specific to the North Lake County Special Recreation Management Area, this represents an increase of 2,300 user days over Alternative C, a decrease of 900 user days in comparison to Alternative B, and a decrease of 6,400 user days in comparison to Alternative A. There would be 5,400 user days available for the remainder of the resource area—the same as under Alternative C, and 2,700 user days less than under Alternative B. The number of groups authorized to operate at any one time in the North Lake County Special Recreation Management Area would be the same as under Alternative C, which is two less than under Alternatives A and B, and one less than under Alternative A. No more than three groups would be authorized to operate in the remainder of the LRA at any one time. Negative impacts to other user groups within the North Lake County Special Recreation Management Area under this alternative would be less than under Alternatives A and B, and slightly higher than under Alternative C. The level of potential impacts to other user groups in the remainder of the resource area would be the same in comparison to Alternative C, and less than under Alternatives A or B. The potential for damage to roads is higher than under Alternative C (Alternative C has the seasonal restriction on operations in the North Lake Special Recreation Management Area). Compared to Alternatives A and B, the potential for negative impacts to roads is slightly lower number of groups for this alternative because of the lower of groups authorized to operate at any one time and the lower number of authorized user days.

Under this alternative, no overnight camping would be allowed in the Black Hills ACEC (3,048 acres), and the southern portion of Connley Hills ACEC. Camping adjacent to the sand dunes (located within the Sand Dunes WSA) would be limited to three designated areas, with camping at one of the three areas closed on a rotational basis. Impacts to recreation activities, and in particular motorized recreation uses, would be significantly lower when compared to the management actions proposed for the sand dunes area under Alternative C. In comparison to Alternatives A and B, there would be no appreciable differance in the impacts to recreation uses in the Lost Forest/Sand Dunes/Fossil Lake ACEC, other than the inconvenience of not being able to camp in traditionally used areas adjacent to the open sand dunes.

Alternative E

Impacts to recreation from actions to protect, restore, or enhance watershed functions, riparian/wetland areas, vegetative communities, wildlife habitats and populations would not vary significantly from under all alternatives. Natural process would be allowed to regulate (e.g., fire) forest health and biodiversity and there would be no impacts relating to recreation.

The entire resource area would be considered a rights-of-way exclusion area (except for existing rights-of-way) which would have a positive effect on dispersed recreation.

Actions would be taken to withdraw the entire resource area from mineral entry, closed to energy and mineral leasing, and closed to mineral material disposal. All of these actions would have a positive effect on recreation activities.

Impacts to recreation relating to the deer winter range in north Lake County would be the same as under Alternatives A and B.

Impacts to recreation relating to actions taken to protect cultural resources would not vary from Alternatives A, B, C, and D.

No special recreation permits would be issued under this alternative which would eliminate all commercial uses of public lands including guided hunting, nature tours, and wilderness therapy group uses, etc. Overall, this would impact recreation because it would preclude segments of the population from using and enjoying public lands.

All existing ACEC's designations would be revoked and no new ACEC's would be designated. The effects on recreation would be less than described under Alternatives C and D, and similar to Alternatives A and B.

Summary of Impacts

Alternative A allows for increased dispersed and developed recreation opportunities while protecting resources. Developed recreation sites would be maintained and expanded as necessary to meet increasing demands for resource-dependent recreation activities. Protection of special status plant and animal species and their habitats would negatively impact dispersed recreation through area and road closures on a case-by-case basis. The management goal for recreation resources would be met under this alternative.

With the exception of several site-specific management actions, impacts to recreation resources from Alternative B would be similar to Alternative A. Revocation of the mineral segregation on the Public Sunstone Area would have significant negative effects on recreational collection of sunstone by the public under Alternative B. Impacts associated with wilderness therapy groups operating with the north Lake County area would potentially decrease slightly under Alternative B because total authorized user days would be capped at 8,300, annually.

Impacts to recreation resources would increase slightly under Alternative C in comparison to Alternatives B and C. Changes in OHV designations for the protection of wildlife, i.e., seasonal road restrictions on motorized access because of the deer winter range and the Northern Wildlife Area would change the composition of dispersed recreation from motorized to nonmotorized. This would have both negative (to motorized recreation) and positive (greater opportunities for solitude) effects on recreation resources. Impacts associated with wilderness therapy groups would be less under Alternative C than in both Alternatives A and B because of the decreased number of authorized user days, and because of the seasonal restrictions in the North Lake County Special Recreation Management Area. Restrictions within the Lost Forest/Sand Dunes/Fossil Lake ACEC would have significant effects on recreation resources under Alternative C in comparison to Alternatives A, B, and D.

Overall, impacts to recreation resources under Alternative D would be less than under Alternative C and slightly higher than under Alternatives A and B.

Impacts to recreation uses within the Lost Forest/Sand Dunes/Fossil Lake ACEC would be lower under Alternative D than under Alternative C, but similar to both Alternatives A and B. There would be slightly higher impacts associated with wilderness therapy operations under Alternative D in comparison to Alternative C, but lower than compared to Alternatives A or B.

Impacts to recreation resources under Alternative E would be the lowest of any alternatives, except in relation to commercial uses and motorized access. No commercial uses would be allowed throughout the resource area which would have higher impacts than any of the other alternatives. Over 99 percent of the resource area would be designated as limited to existing roads and trails for motorized access. This would impact recreation resources slightly less than under Alternative C, but would have greater impacts than in comparison to Alternatives A, B, or D.

Secondary, Indirect, and Cumulative Impacts

When taken in concert, future management actions relating other resources on lands within and adjacent to the LRA could negatively impact recreation resources. Although the population base within the boundaries of the LRA is fairly steady, urban growth and increases in populations in surrounding areas, and in particular the Bend/Redmond area would have the potential to increase recreation uses especially winhin the north Lake County portion of the resource area.

Off-Highway Vehicles

Management Goal–***Manage off-highway vehicle (OHV) use to protect resource values, promote public safety, provide OHV use opportunities where appropriate, and minimize conflicts among various users.***

Analysis of Impacts

Alternative A

Under this alternative the greatest amount of public land would be open to OHV use (2,510,908 acres). Limited designations include 130,323 acres limited to designated roads and trails, and 511,642 acres would be limited to existing roads and trails. Only 8,543 acres would be closed to OHV uses. Collectively, the limited designations and areas closed to OHV use would not significantly restrict motorized recreation (see Table 4-5).

Actions to protect, restore, or enhance watersheds, riparian/wetlands areas, vegetative communities, wildlife and wildlife habitats, special status plant and animal species, and forest health and biodiversity have the potential to negatively affect motorized recreation. The significance of the effects would be dependent on the intensity and duration of the proposed actions. Future management actions focusing on the protection of greater sage-grouse and habitat could have significant negative impacts on motorized recreation. Habitat critical to various life stages of the greater sage-grouse are known to occur over large areas of the LRA. Area and road closures would result in reduction in areas open to motorized uses. Potential negative effects relating to greater sage-grouse issues not withstanding, it is anticipated that the negative impacts to motorized uses would not be significant because potential area and road closures would be on a site-specific basis. The creation of SMA's such as ACEC's and RNAs would negatively affect motorized recreation activities by restricting access.

The extraction of mineral materials, oil and gas and geothermal exploration, and the development and production of locatable minerals would have minimal negative effects on motorized recreation, and may possibly provide motorized recreational opportunities in the long-term through the development of new roads and trails.

In many instances, land acquisitions, the issuance of rights-of-way leases, and permits, and the construction of roads may benefit motorized recreational activities by providing more opportunities for access.

The mule deer winter range closure in north Lake County would negatively impact motorized recreation activities, but these impacts are not significant because the closure only restricts access on a seasonal basis. Access is not restricted during hunting seasons. Snowmobile activities are negatively impacted, but the extent of the impacts is dictated by the presence or lack of snowfall.

Actions to protect cultural resources could negatively affect motorized uses because of road and area closures. Overall, these impacts would be minimal because these closures would be on a site-specific basis

The wettest periods during the year typically occur in the late fall, winter, and early spring seasons; it is at this time when roads and areas designated as open have the greatest potential for resource damage to occur.

Alternative B

There would be virtually no difference in the impacts to OHV's under this alternative in comparison to the current situation. There would be a net loss of 3,434 acres under the open designation in comparison to Alternative A—a change of only 0.1 percent. Total acres under the open designation in Alternative B would be 2,507,474. Acres limited to designated roads and trails would not differ appreciably from Alternative A, and the number of acres limited to existing roads and trails would increase by 3,599 acres (see Table 4-5).

Actions to protect, restore, or enhance watersheds, riparian/wetlands areas, vegetative communities, fish and wildlife and wildlife habitats, and special status plant and animal species would have the same level of impacts as management actions proposed under the current situation. The significance of the effects would continue to be dependent on the intensity and duration of the proposed actions. Future management actions focusing on the protection of greater sage-grouse and habitat would have the same potential to negatively impact motorized recreation as under Alternative A.

There would be no appreciable difference in the impacts of actions relating to the extraction of mineral materials, oil and gas and geothermal exploration, and the development and production of locatable minerals in comparison to the current situation. Opportunities for increased motorized recreation could be slightly higher compared to the current situation because of the potential for increased development under this alternative, especially in the long term.

There would be no appreciable difference in impacts to motorized recreation from management actions under this alternative to that of the current situation relating to the issuance of rights-of-way, leases, and permits. With greater emphasis on acquisition of lands with high recreational values motorized recreation would potentially be enhanced over the current situation.

Negative effects on motorized recreation uses may increase slightly over the current situation from management actions to enhance forest health and biodiversity. Existing and newly-created cutting areas would be maximized; up to 75 percent of early- to mid-successional western juniper stands would be treated. However, it is anticipated these impacts would be for the short term because area and road closures would only be implemented during treatment and rehabilitation efforts.

With no changes in the mule deer winter range closure in north Lake County the impacts to motorized recreation would be the same as under the current situation.

Impacts to OHV uses relating to cultural resources under this alternative would be similar to those addressed under the current situation. The protection of cultural resources could negatively affect motorized recreation because of road and area closures. Overall, these impacts would be minimal because closures would be on a site-specific basis.

Alternative C

There would be no open designation for motorized use within the LRA under this alternative. The negative impacts to motorized recreation in comparison to Alternatives A and B would be significant. Motorized access within the LRA would be restricted to either a limited designation (24.4 percent designated roads and trails and 74.3 percent existing roads and trails) or closed (1.3 percent). Under Alternatives A and B, approximately 79 percent of the LRA would be under the open designation, and the limited designations would account for approximately 20 percent. Although the percentage of the total acres closed under this alternative would only increase by approximately one percent in comparison to Alternatives A and B, the Sand Dunes WSA would be included in these closures. The Sand Dunes WSA receives the highest OHV recreational use throughout the entire LRA and closure of this area in conjunction with the 99 percent of the LRA designated as either limited to existing roads and trails (74.3 percent) or designated roads and trails, (24.4 percent) would severely curtail motorized recreation uses.

The use of all-terrain vehicles in conjunction with the collection of deer and elk antlers in north Lake County (including the deer winter range area and the proposed Northern Wildlife Area) has been increasing in popularity over the past several years. With motorized access limited to designated roads and trails and existing roads and trails in these areas, this activity would only be allowed to continue on foot. However, there would a benefit to this restriction because there would possibly be a corresponding decrease in impacts from the use of all-terrain vehicles which could cause rutting and soil erosion, especially during wet conditions, and the trampling of vegetation and conflicts with wildlife, including big game animals and greater sage-grouse. The use of motorized vehicles to retrieve big game during the hunting seasons would be eliminated throughout the LRA. This would be a significant negative impact on hunters, especially for elderly

Table 4-5.— *Impacts to off-highway vehicle uses by alternative (acres)*

	Alternative									
	A		B		C		D		E	
Designation	Baseline [1]	% of total [2]	Proposed acres	% of total [2]	Proposed acres	% of total [2]	Proposed acres	% of total [2]	Proposed acres	% of total [2]
Open	2,510,908	79.4	2,507,474	79.3	0	0.0	2,037,803	64.5	0	0.0
Limited to designated roads/trails [3]	130,323	4.1	130,159	4.1	771,524	24.4	355,705	10.9	0	0.0
Limited to existing roads/trails	511,642	16.2	515,241	16.3	2,349,385	74.3	756,705	24.0	3,161,416	100.0
Closed	8,543	0.3	8,543	0.3	40,507	1.3	11,202	0.5	0	0.0

[1] The baseline acres represent current OHV designations in the LRA.
[2] The percent total acres represents the percentage of designated acres as part of the total acres within the LRA.
[3] Acreages include seasonal limitations for mule deer winter range.

hunters and those with physical disabilities.

Actions to protect, restore, or enhance watersheds, riparian/wetlands areas, vegetative communities, fish and wildlife and wildlife habitats, and special status plant and animal species would have little effect on OHV use because there would be no areas of the LRA designated as open.

There would be no appreciable difference in the impacts to motorized recreation from management actions relating to the extraction of mineral materials, oil and gas and geothermal exploration, development and production of locatable minerals, the issuance of rights-of-way, leases, permits, or the acquisition of lands in comparison to Alternatives A and B.

The impacts to motorized recreation from management actions relating to the protection of cultural resources would not vary significantly in comparison to Alternative A and B.

Alternative D

The percentage of land in the open designation under this alternative (64.5 percent) is lower than both Alternatives A and B (79.4 percent and 79.3 percent, respectively) and higher than under Alternative C (no open designation). Designations proposed under Alternative C would have significantly greater impacts to motorized recreation use compared to Alternatives A, B, and D. Alternative D would be the least impacting of all.

The addition to the deer winter range under this alternative is the same as under Alternative C—34,374 acres added to the existing deer winter range of 66,460, for a total of 100,834 acres which would be limited to designated roads and trails from December 1 through March 31, annually. During the remainder of the year this area would be limited to existing roads and trails. Motorized access within the Northern Wildlife Area would be the limited to existing roads and trails—the same as under Alternative C. The impacts to motorized uses under Alternative D, in relation to the deer winter range and the Northern Wildlife Area, would be the same as listed under Alternative C and more than under Alternatives A and B.

Actions to protect, restore, or enhance watersheds, riparian/wetlands areas, vegetative communities, fish and wildlife and wildlife habitats, and special status plant and animal species would have the same level of impacts as management actions proposed under Alternatives A and B. The significance of the effects would be dependent on the intensity and duration of the proposed actions, i.e., the size and duration of any road and/or area closures. Future management actions focusing on the protection of greater sage-grouse and habitat would have the same potential to negatively impact motorized recreation as under Alternatives A and B.

There would be no appreciable difference in the impacts to motorized recreation from management actions relating to the extraction of mineral materials, oil and gas and geothermal exploration, development and production of locatable minerals, the issuance of rights-of-way, leases, permits, or the acquisition of lands in comparison to Alternatives A, B, and C.

Negative effects on motorized recreation uses related to management actions to enhance forest health and biodiversity would be similar to Alternatives A and B, and less than under Alternative C (under Alternative C no open designation exists). It is anticipated that the impacts would be for the short-term because road closures would only be implemented during treatment and rehabilitation efforts.

Impacts to OHV uses relating to cultural resources under this alternative would be similar to those addressed under all other alternatives. The protection of cultural resources could negatively affect motorized recreation because of road and area closures. Overall, these impacts would be minimal because closures would be on a site-specific basis.

Alternative E

Under this alternative the entire LRA would be designated as limited to existing roads and trails. Impacts to motorized recreation would be similar, or slightly less, in comparison to Alternative C. Under Alternative C, the Sand Dunes WSA would be closed to OHV uses and under Alternative E the designation of limited to existing roads and trails would essentially close the area also. Alternatives A, B, and D would be less impacting in comparison to Alternative E.

Management actions relating to vegetative communities, fish and wildlife and wildlife habitats, and special status plant and animal species would have little or no impacts on motorized recreation. Future management actions focusing on the protection of greater sage-grouse and habitat would have the same potential to negatively impact motorized recreation as under Alternatives A, B, C, and D because of possible road closures.

No organized OHV events would be authorized under Alternative E, and this would be a greater impact than under the other alternatives because OHV events would not restricted.

Summary of Impacts

Common to all alternatives, future management actions which would focus on the protection of greater sage-grouse and habitat could restrict motorized recreation within the LRA. The significance of the impacts on motorized recreation uses would be dependent on the scope of the area and road closures which would be initiated.

Alternative A provides for the highest percentage of public land that would be open to OHV uses (79.4 percent). Collectively, the limited and closed designations would not significantly restrict motorized recreation within the LRA. There would be no appreciable difference in the OHV designations between Alternatives A and B.

Alternative C would have much greater impacts to motorized recreation than either Alternatives A or B. Under Alternative C, no portion of the LRA would be under the open designation, while approximately 99 percent would be under a limited designation. Only Alternative E would be comparable to Alternative C in terms of overall negative impacts to motorized recreation. Under Alternatives C and E no motorized uses would occur within the Sand Dunes WSA.

Alternative D would have less of a negative impact on motorized recreation uses than under either Alternative C or E. With added restrictions relating to the deer winter range and the Northern Wildlife Area, impacts to motorized uses would be slightly higher under Alternative D than under Alternatives A or B.

Management goals for OHV's would be best met under Alternative D. This alternative provides for the protection of resources while allowing opportunities for motorized recreation uses throughout the resource area, including the Sand Dunes which receives the highest density of motorized use within the entire LRA.

Secondary, Indirect, and Cumulative Impacts

Management actions, including past, present, and reasonably foreseeable actions, collectively, would impact motorized recreation uses and users within the LRA. Past actions which restrict access and/or numbers of motorized uses at popular OHV areas (e.g., the Oregon Coast, Millican Valley) result in users looking else where for recreation opportunities. Uses then increase within other areas (e.g., Sand Dunes) which then results in increased user conflicts and potential resource impacts. The protection of the resources then dictate increased management which inevitably requires stricter controls on access and numbers of users.

Future management actions relating to the protection of potential or existing threatened, endangered, and/or sensitive plant and animal species have a high potential for negatively impacting motorized recreation uses. Future management actions relating to the protection of greater sage-grouse and habitat would undoubtably have an impact on motorized recreation uses within the LRA and other Federal lands adjacent to the LRA. However, the degree or level of these impacts are unknown at this time.

The BLM's "National Off-Highway Vehicle Initiative" and the USFS's "Forest Service's Roadless Areas Initiative" would most certainly affect motorized recreation uses, in regards to both present and future actions proposed or enacted. Similar to recreation resources, the population growth that the Bend/Redmond area is experiencing would bring about increased motorized recreation use in the north Lake County area of the LRA.

Visual Resources

Management Goal—*Manage public land actions and activities consistent with visual resource management (VRM) class objectives.*

Analysis of Impacts

Alternative A

Actions that promote the protection of watershed functions, riparian/wetlands, wildlife habitat, and vegetative communities would enhance the natural landscape character. Such actions would include reduced livestock grazing within riparian areas, stream bank stabilization, and the disallowance of new developments such as building fences. However, monoculture seedings, e.g., crested wheatgrass for grazing purposes, could create an unnatural appearance within a characteristic landscape. Impacts from forest health management actions should not significantly affect visual quality if these actions are conducted on small, localized areas.

Management actions relating to the extraction of mineral materials, oil and gas and geothermal explora-

tion, and the development and production of locatable minerals have a high potential to change the natural character of the landscape. However, the potential for large-scale development relating to mining is considered to be low and existing mitigation measures relating to these activities would reduce the significance of the effects from these actions.

The issuance of rights-of-way, leases, and permits, and road construction activities have the potential to negatively impact visual resources. Restricting future developments to designated utility corridors would help to mitigate these impacts.

With an emphasis on aggressive initial fire attack and full suppression of all wildland fires, there could be negative impacts to visual qualities. Specific actions causing adverse impacts would be from earth-moving equipment and other vehicles driving crosscountry. Adverse impacts from controlled burns would not be significant if mitigation measures are followed to retain the naturalness of the landscape.

Negative effects on visual resources could occur from OHV activities if these uses cause loss of vegetation, soil exposure, or erosion. Approximately 79 percent of the LRA is designated open. Crosscountry vehicular travel is allowable under this designation.

The construction of recreation sites or the expansion of existing sites under this alternative would be considered if unacceptable resource degradation was occurring. It is anticipated that any such development would not significantly impact visual qualities, and would reduce impacts in many cases.

There are twelve WSA's, totaling approximately 472,768 acres, which are managed under a VRM Class I to maintain the highest level of protection for existing visual qualities. This designation would remain in effect until such time as Congress acts on designation.

Alternative B

Actions that promote the protection of watershed functions, riparian areas and wetlands, protect wildlife habitat, and vegetative communities would enhance the natural landscape character. Such actions would include reduced livestock grazing within riparian areas, stream bank stabilization, and the disallowance of new developments such as building fences. The protective management actions under this alternative would not vary significantly from the current situation and the overall changes in visual qualities would be similar as well. Changes to the landscape character could increase slightly over the current situation from management actions to enhance forest health and biodiversity. Existing and newly-created cutting areas would be maximized; up to 75 percent of early- to mid-successional western juniper stands would be treated.

Impacts to visual resources from management actions relating to the extraction of mineral materials, oil and gas and geothermal exploration, and the development and production of locatable minerals would have a slightly higher potential to change the natural character of the landscape than under the current situation, because these consumptive actions would be encourage. However, the potential for large-scale development relating to mining would still be relatively low and existing mitigation measures relating to these activities would reduce the significance of the effects from these actions.

The issuance of rights-of-way, leases, and permits, and road construction activities under this alternative would have potentially the same impacts on visual resources as under the current situation. The emphasis for land acquisitions under this alternative would focus on acquiring lands that would facilitate commodity production, and these actions could potentially have a negative effect on visual quality on a site-specific basis.

The overall impacts to visual resources relating to initial fire attack and suppression of wildland fires would not vary significantly from the current situation. The level of prescribed burns would be increased under this alternative and this would raise the potential for adverse impacts to occur to visual resources, but the increase would not be significant.

Negative effects on visual resources from OHV activities under this alternative would not change appreciably from the current situation. The total number of acres in the open designation would only decrease by 3,434 acres in comparison to Alternative A.

Any impacts to visual quality from recreation activities under this alternative would not vary from the current situation.

There would be no change in the VRM designations in WSA, so there would be no difference visual qualities from the current situation.

Alternative C

Impacts to visual resource qualities from actions that promote the protection of watershed functions, riparian areas and wetlands, protect wildlife habitat, and vegetative communities would not vary from those addressed under Alternative A or B. Changes to the landscape character from management actions to enhance forest health and biodiversity would decrease slightly in comparison to Alternative B, because there is a decrease of 25 percent in the amount of early- to mid-successional western juniper stands proposed for treatment.

Impacts to visual resources from management actions relating to the extraction of mineral materials, oil and gas and geothermal exploration, and the development and production of locatable minerals would be similar as compared to the current situation. Compared to Alternative B, there would be less potential for negative impacts to occur because consumptive uses would not be encouraged under this alternative. It is anticipated that the potential for large-scale development relating to mining would still be relatively low and existing mitigation measures relating to these activities would reduce the significance of the effects from these actions.

The issuance of rights-of-way, leases, and permits, and road construction activities under this alternative would have potentially the same impacts on visual resources as under both Alternative A and B. Land acquisitions under this alternative would create less potential for negative effects on visual resources compared to Alternative B which focuses on acquiring lands with high commodity values.

The overall impacts to visual resources relating to initial fire attack and suppression of wildland fires would not vary significantly from either Alternative A or B. Reduction in fuel loads through prescribed fire, mechanical treatments, and wildland fire are proposed for up to 640,000 acres; this level of treatment would cause a higher level of negative impacts to visual resources than both Alternative A and B. Under the current situation (Alternative A), approximately 5,000–20,000 acres are treated annually, and approximately 64,000 acres are proposed for treatment under Alternative B.

Under this alternative, there would be no change in VRM designations in WSA's. Proposed ACEC designations under this alternative would provide more protection for visual quality for additional areas of up to180,000 acres.

Negative effects on visual resources from OHV activities under this alternative would be lower than under both Alternative A and B. The total number of acres in the open designation would decrease by 2,510,908 acres in comparison to Alternative A, and by 2,507,908 compared to Alternative B.

There would not be an appreciable difference in the level of impacts from recreation activities under this alternative in comparison to either Alternative A or B.

Alternative D

Impacts to visual resource qualities from actions that promote the protection of watershed functions, riparian areas and wetlands, protect wildlife habitat, and vegetative communities would not vary from those addressed under Alternatives A, B, or C. Changes to the landscape character from management actions to enhance forest health and biodiversity under this alternative would be similar to Alternative C.

Impacts to visual resources from management actions relating to the extraction of mineral materials, oil and gas and geothermal exploration, and the development and production of locatable minerals would vary between Alternatives A, B, and C, but the differences would not be significant. More areas within the resource area would be open to mineral leasing in comparison to Alternative C, but less in comparison to Alternative B. It is anticipated that the potential for large-scale development relating to mining would still be relatively low and existing mitigation measures and VRM guidelines relating to these activities would reduce the significance of the effects on scenic quality from these actions.

The issuance of rights-of-way, leases, and permits, and road construction activities under this alternative would have potentially the same impacts on visual resources as under both Alternatives A, B, and C. Land acquisition would be the same between Alternatives C and D and any impacts would be the same as described under Alternative C.

Impacts to visual resources under this alternative relating to initial fire attack and suppression of wildland fires would not vary significantly from Alternatives A, B, or C. Fuel treatments under this alternative (up to 480,000 acres annually) would be lower than under Alternative C, and higher than under Alternatives A and B. Therefore, potential negative effects on visual resources under this alternative would be lower than under Alternative C, but higher than both Alternative A and B.

Under this alternative, there would be no change in VRM designations in WSA's, and proposed ACEC designations would provide the same level of protection for visual qualities as under Alternative C.

Negative effects on visual resources from OHV activities under this alternative would not differ appreciably in comparison to Alternative C.

There would not be an appreciable difference in the level of impacts from recreation activities under this alternative in comparison to Alternatives A, B, or C.

Alternative E

Under this alternative, there would be no change in the VRM designations in WSA's. No ACEC's would be designated so visual qualities within these areas would not receive the added protection as under Alternatives C and D. All VRM designations in the remainder of the LRA would be revoked and natural processes would be allowed to determine visual quality. Commodity uses such as mining, grazing, commercial wood cutting, and other resource consumptive uses would not be allowed and the potential for negative impacts to visual quality in comparison to all of the other alternatives would be reduced significantly.

Negative impacts to visual resources, relating to initial attack and fire suppression, under this alternative would be higher than Alternatives A, B, C, or D because there would be a minimal level of time or resources used for these actions. However, fuel treatments would not occur under this alternative and the impacts to visual qualities would be the lowest of all the alternatives.

Impacts to visual quality from recreation uses would be minimized compared to all other alternatives. Site rehabilitation or closure would be the primary management action taken to prevent adverse impacts to visual qualities.

Potential impacts on visual qualities from OHV uses would be lower than under any other alternative. The entire resource area would be limited to travel on existing roads and trails only.

Summary of Impacts

The management goals for visual resources, which is to manage public land actions and activities consistent with VRM objectives, could be met under all of the alternatives. Under all of the alternatives, with the exception of Alternative E, there would be potential for negative impacts to occur on a site-specific basis from such things as proposed development, grazing, woodland treatments, OHV uses, mining, recreation activities, and fire suppression activities. However, by following BMP's and mitigations for specific projects, the degree or level of negative impacts on visual resources would be minimized.

The greatest protection for visual resources would occur under Alternative E. Alternative B is the commodity-driven alternative and would have the greatest potential for negatively impacting visual resources. Overall, Alternatives C and D are similar in terms of the potential for negatively impacting visual resources. However, both Alternatives C and D would provide a greater level of protection for visual resources than both Alternative A and B.

Secondary, Indirect, and Cumulative Impacts

With the western United States experiencing increases in population, there is a corresponding increase in the potential for proposed development, consumptive uses, recreation activities (motorized and nonmotorized), and the continuation of existing uses such as grazing. It is not anticipated that these increases, and other uses and activities, would cumulatively have significant negative impacts on visual resources. Following BMP's and mitigation for individual projects, the overall effects or level of negative impacts on visual resources would be minimized.

Energy and Mineral Resources

Assumptions

The allocations and management prescriptions of other resource programs affect availability of land for exploration and development of energy and mineral resources differently throughout the alternatives. Operating constraints on locatable, leasable, and salable mineral activity vary from area to area, and restrictively, across these alternatives.

Future trends and assumptions, along with 15 to 20-year energy and mineral development scenarios for the planning area, are discussed in detail in Appendix N2. It is assumed that the same level of interest in mineral exploration and development would be the same through all of the alternatives.

To assess the effects of various resource allocations and management prescriptions through the alternatives, constraints have been divided into four categories: (1)

closures, including withdrawals; (2) no surface occupancy (for leasable minerals); (3) standard requirements or lease terms, and (4) additional restrictions, such as seasonal operating and controlled surface use constraints. The closures are further divided into discretionary (under the control of BLM) and nondiscretionary (previously imposed by law, regulation, Secretarial decision or Executive order). Tables 3-7 and 4-6 show, by alternative, the acres of mineral estate of high, moderate, and low/unknown mineral potential available for, as well as restricted from, mineral exploration and development.

Management Goal 1— ***Provide opportunity for the exploration, location, development, and production of locatable minerals in an environmentally-sound manner. Eliminate and rehabilitate abandoned mine hazards.***

Analysis of Impacts

Alternatives A and B

These alternatives provide the most land available for locatable mineral exploration and development with the fewest restrictions, with Alternative B being even less restrictive than Alternative A.

Under Alternative A, 10 percent of high-potential and 2 percent of moderate-potential locatable mineral lands would be closed, while 11 percent of high-potential and 71 percent of moderate-potential locatable mineral lands would be open subject to additional restrictions (Table 4-6).

Under Alternative B, 0 percent of high-potential and 2 percent of moderate-potential locatable mineral lands would be closed, and 11 percent of high-potential and 71 percent of moderate-potential locatable mineral lands would be open subject to additional restrictions. Under Alternative B, the Public Sunstone Collecting area would be open to mineral entry, which would make an additional 2,440 acres of high-potential sunstone ground available for mining claim location. An increase of 122 mining claims would be anticipated. This could equate to from 122 new, small sunstone operations to a few new large ones. The public would not be able to collect sunstones without the permission of the mining claimants.

Alternative C

Except for Alternative E, this alternative is the most restrictive to the exploration and development of mineral resources in the planning area. Compared to Alternatives A and B, there would be less land available for mineral exploration and development, and more restrictions on lands that are open.

Under Alternative C, 86 percent of high-potential and 62 percent of moderate-potential mineral lands would be closed, and 5 percent of high-potential and 34 percent of moderate-potential mineral lands would be open subject to additional restrictions (Table 4-6).

Alternative D

This alternative would provide for more mineral-related opportunities than Alternative C, but less than Alternative B. Under Alternative D, 10 percent of high-potential and 2 percent of moderate-potential mineral lands would be closed, and 9 percent of high-potential and 70 percent of moderate-potential mineral lands would be open subject to additional restrictions (Table 4-6).

Alternative E

This would be the most restrictive of all of the alternatives. Under this alternative, the entire resource area (100 percent) would be withdrawn from locatable mineral entry (Table 4-6).

Summary of Impacts

For locatable minerals, Alternative B, followed closely by Alternative A, would close or restrict the least amount of public land to locatable mineral exploration/development and, therefore, would offer the greatest opportunity for these activities. Alternative E would close the entire area. The remaining alternatives would be intermediate in their overall effects to mineral activity.

Management Goal 2—***Provide leasing opportunity for oil and gas, geothermal energy, and solid minerals in an environmentally-sound manner.***

Analysis of Impacts

Alternatives A and B

These alternatives provide the most land available for leasable mineral exploration and development with the fewest restrictions, with Alternative B being even less restrictive than Alternative A. Under Alternative A, 36 percent of high-potential and 16 percent of moderate-potential fluid and solid leasable mineral lands would

Table 4-6.—*Acres of mineral restrictions within areas of high and moderate mineral potential* [1]

	Alternative A		Alternative B		Alternative C		Alternative D		Alternative E	
Mineral restrictions	High	Moderate	High	Moderate	High	Moderate	High	Moderate	High	Moderate
Leasable minerals										
Closed	41,268	440,199	41,269	439,314	41,347	520,041	41,315	445,057	114,309	2,708,184
NSO or other	59,524	1,071,171	59,523	1,068,605	81,770	2,201,725	59,453	1,134,354	0	0
Locatable minerals										
Closed	2,611	4,678	0	4,347	21,614	166,600	2,632	6,014	25,245	268,224
NREC or other	2,719	191,301	2,719	191,633	1,236	91,598	2,324	187,307	0	0
Salable minerals										
Closed	41,418	558	41,418	558	43,473	1,087	41,555	515	44,138	1,154
Other	1,468	203	1,468	203	660	64	943	293	0	0

[1] These acre values are for areas of Federal mineral ownership only.

be closed, and 52 percent of high-potential and 40 percent of moderate-potential lands would be open subject to the no-surface-occupancy or other stipulations (Table 4-6).

Under Alternative B, 36 percent of high-potential and 16 percent of moderate-potential fluid and solid leasable mineral lands would be closed, and 52 percent of high-potential and 39 percent of moderate-potential lands would be open subject to the no-surface-occupancy or other stipulations. This would be a minimal impact to the exploration and development of leasable minerals in the planning area.

Alternative C

Except for Alternative E, this alternative is the most restrictive to the exploration and development of leasable mineral resources in the planning area. Compared to Alternatives A and B, there would be less land available for mineral exploration and development, and more restrictions on lands that are open. Under Alternative C, 36 percent of high-potential and 19 percent of moderate-potential mineral lands would be closed, and 72 percent of high-potential and 81 percent of moderate-potential mineral lands would be open subject to the no-surface-occupancy or other stipulations. This alternative would significantly reduce the amount of land available for exploration and development.

Alternative D

This alternative would provide for more leasable mineral-related opportunities than Alternative C, but less than Alternatives A and B. Under Alternative D, 36 percent of high-potential and 16 percent of moderate-potential fluid and solid leasable mineral lands would be closed, and 52 percent of high-potential and 42 percent of moderate-potential mineral lands would be open subject to no-surface-occupancy and other stipulations.

Alternative E

This would be the most restrictive of all of the alternatives. Mineral leasing would not be allowed in the entire (100 percent) planning area.

Summary of Impacts

Impacts to leasable mineral resources range from minor to extreme. Alternative B, followed closely by Alternative A, would close or restrict the least amount of public land to leasable mineral exploration/development and, therefore, would offer the greatest opportunity for these activities. Alternative E would close the entire area. The remaining alternatives would be intermediate in their overall effects to mineral activity.

Management Goal 3—*In an environmentally-sound manner, meet the demands of local, state, and Federal agencies, and the public, for mineral material from public lands.*

Analysis of Impacts

Alternatives A and B

These alternatives provide the most land available for salable mineral exploration and development with the fewest restrictions.

Under both Alternatives A and B, 94 percent of high-potential and 48 percent of moderate-potential mineral lands would be closed. About 3 percent of high-potential and 9 percent of moderate-potential lands would be open, but subject to other restrictions.

Opening the Devils Garden to salable mineral disposal would be a significant positive impact on the availability of decorative stone such as slab lava, should the area be released from wilderness study.

Alternative C

Except for Alternative E, this alternative is the most restrictive to the exploration and development of mineral material resources in the planning area. Compared to Alternatives A and B, there would be less land available for salable mineral exploration and development, and more restrictions on lands that are open. Under Alternative C, 98 percent of high-potential and 94 percent of moderate-potential salable mineral lands would be closed. About 1 percent of high-potential and 6 percent of moderate-potential lands would be open, but subject to other restrictions. This would be a significant reduction in the availability of salable mineral material sites in the planning area.

Alternative D

This alternative would provide for more leasable mineral-related opportunities than Alternative C, but less than Alternative B. Under Alternative D, 94 percent of high-potential and 45 percent of moderate-potential salable mineral lands would be closed. About 2 percent of high-potential and 25 percent of moderate-potential lands would be open, but subject to

other restrictions. Areas would still be open to meet public demand.

Alternative E

This would be the most restrictive of all of the alternatives. All of the planning area (100 percent), including existing pits and quarries would be closed. The disposal of salable minerals would be allowed only for critical road construction and in case of emergencies, such as flood-fighting or erosion control.

Summary of Impacts

Impacts to salable mineral resources range from minor to extreme. Both Alternatives A and B would close or restrict the least amount of public land to salable mineral exploration/development equally and, therefore, would offer the greatest opportunity for these activities. Alternative E would close the entire area. The remaining alternatives would be intermediate in their overall effects to mineral activity.

Secondary, Indirect, and Cumulative Impacts

The most favorable condition for exploration and development of mineral resources would be with as few restrictions as possible. Individuals and companies involved in exploration and development face numerous environmental obligations in order to comply with standard requirements and lease and sale terms. Any additional measures for mitigation of disturbance to lands and nonmineral resources bring about even greater impacts to mineral exploration and development. Compliance with applicable environmental laws and regulations can add costs and delays resulting in adverse effects to exploration and mining that cannot be avoided. The imposition of discretionary mitigation measures generally adds more costs to mineral exploration and developmenmt, thereby increasing the adverse effects to these programs. No-surface-occupancy stipulations may be appropriate for small areas where directionally drilling may be feasible (up to 0.5 miles). For large areas covering many square miles, such as the proposed Rahilly-Gravelly ACEC and existing Abert Lake ACEC, no-surface-occupancy stipulations effectively close the area to mineral operations. In addition, seasonal restrictions could result in access times being too short for effective exploration and development. When one considers land currently closed to mineral operations, such as wildlife refuges, military withdrawals, and new special management proposals that restrict or preclude mineral operations such as WSA's and ACEC's, it is clear that cumulative impacts are significant.

Numerous mining notices, plans of operations, and occupancies could occur in the sunstone area. With every additional notice/plan/occupancy, impacts to the vegetation, wildlife, and visual resources of the area increase. Due to the open nature of the landscape, this area is visible for considerable distances. As the number of occupancies increase, the area could become a fairly obvious visual element from viewpoints on Hart Mountain and along various roads. In addition, the accumulation of impacts from these mining-related activities, grazing, and recreation could be substantial. It is difficult to project the actual number of acres that would be impacted from all of these activities. However, as mentioned previously, in 20 years the total cumulative surface disturbance from exploration, mining, and occupancy combined could reach 660 acres. Because of concurrent reclamation, it is unlikely that more than 160 acres of unreclaimed surface disturbance would exist at any given time.

The planning area would be open to mineral entry under Alternatives A through D. As long as the prospector/miner met the requirements of the general mining laws and "Federal Land Policy and Management Act" (FLPMA) and the relevant regulations, exploration, mining, and occupancy could not be denied. However, compliance with relevant laws, regulations, the proposed action, and the mitigating measures, would minimize cumulative adverse impacts.

The only irreversible and irretrievable commitment of resources would be the amounts of mineral commodities actually removed, such as sand, gravel, perlite, sunstones, and diatomite. Geothermal energy (heat) is a renewable resource that, over time, is replenished by the decay of radioactive minerals and heat-producing chemical reactions.

Lands and Realty

Management Goal 1—*Retain public land with high public resource values. Consolidate public land inholdings and acquire land or interests in land with high public resource values to ensure effective administration and improve resource management. Acquired land would be managed for the purpose for which it was acquired. Make available for disposal public land within Zone 3 by State indemnity selection, private or state exchange, "Recreation and Public Purpose Act" lease or sale, public sale, or other authorized method, as applicable.*

Assumptions

The Lands and Realty program is a support function of other resource programs. Consequently, impacts to the program are a direct result of the emphasis of other resource programs. Land tenure actions would be directed to a point ranging from fully developing commodities to preserving natural values as dictated by other resource programs.

Lands being considered for disposal occur in Zone 3 and are specifically identified by alternative on Maps L-1, -3, -4, and -5 and Appendix O2. Contingent upon site-specific analysis and inventory for resource values in accordance with NEPA, any of the land identified as suitable for disposal could be transferred from Federal ownership during the life of the plan. Disposal would usually be by exchange or sale, however the preferred method of disposal would be by exchange. Any acquired land or acquired interest in land would be managed for the purposes for which it was acquired or in the same manner as adjacent or comparable public land.

Analysis of Impacts

Alternative A

Under this alternative, land sales would be limited to those parcels identified in existing management framework plans (approximately 42,500 acres). Land sales could increase county(s) tax revenues by adding land to the tax rolls, and could increase management flexibility in resolving situations involving survey errors and hiatuses and unauthorized uses. Land tenure adjustment by exchange would be allowed when there is no significant resource conflict on the selected BLM-administrative parcels and the offered land possess desirable resources. An emphasis on acquiring land with high resource values such as lands within WSA's or ACEC's, T&E species habitat, riparian or wetland areas, etc., would be of primary consideration.

Proposals involving the consolidation of split-estate would be considered on a case-by-case basis.

Alternative B

Under this alternative, the major emphasis of land tenure adjustment would be for commodity production. Decisions to retain or dispose of public land or to acquire private land would be based on the opportunity to enhance commodity production. Exchanges may not result in the acquisition of land possessing high public resource values. In some cases resource values (i.e., riparian and wildlife habitat) could be lost from public ownership if shown to benefit commodity production. Implementation of this proposal would limit disposal opportunities to approximately 54,800 acres, which is an increase above the level of Alternative A. The benefits derived from land sales under this alternative would be similar to Alternative A.

Alternative C

Impacts under this alternative would be the same as for Alternative A, except the major emphasis of land tenure adjustment would be retention/acquisition of land with high public resource value. Decisions to retain or dispose of public land or to acquire private land would be based on the quality of public resource values. Implementation of this proposal would reduce the disposal opportunities to approximately 8,000 acres, lower than either Alternative A or B. The benefits derived from land sales would also be reduced. Under certain circumstances disposal of small parcels of public land would be permitted in Zones 1 and 2. The consolidation of split-ownership surface and subsurface estates would be pursued on a case-by-case basis to facilitate the efficient and effective management of public land.

Alternative D

Same as for Alternative C, except the main emphasis for land tenure adjustment would be to protect and improve natural values while providing commodity production.

Alternative E

Under this alternative, public land would be retained throughout the resource area and only considered for disposal on a case-by-case basis.

Summary of Impacts

Management goals would be achieved under all alternatives except under Alternative E. Land sales opportunities would be greatest in Zone 3 under Alternatives A and B, approximately 42,500 acres and 54,800 acres, respectively. Exchanges and acquisitions in other land zones would be allowed to meet other resource objectives. Implementing Alternative B, land tenure adjustments would emphasize retention/acquisition of commodity producing land. Significant public resource values such as riparian and wildlife habitat may potentially be lost from public ownership. Under

Alternatives C and D, land tenure adjustments would emphasize retention/acquisition of land high in resource value. Disposal opportunities would be greatly reduced from Alternatives A and B, which in turn would limit the potential for private land acquisition by limiting the pool of public disposal lands necessary to maintain the required public/private land ownership ratio in the resource area. Under Alternative E, there would be little to no land acquisitions, and the majority of the public lands would be retained and only considered for disposal on a case-by-case basis.

Management Goal 2—*Meet public needs for land use authorizations such as rights-of-way, leases, and permits.*

Assumptions

Section 503 of the FLPMA provides for the designation of rights-of-way corridors and encourages use of rights-of-way in common to minimize environmental impacts and the proliferation of separate rights-of-way. BLM policy, as described in BLM Manual 2801, is to encourage prospective applicants to locate their proposals within corridors. However, when rights-of-way corridor proposals are in conflict with SMA's such as WSA's and ACEC's, these areas should be avoided.

Analysis of Impacts

Alternative A

There would be no impacts to the continued designation of public land for rights-of-way corridors. However, those areas currently identified as exclusion/avoidance areas places severe restrictions on the location of rights-of-way, other land use authorizations and limits or eliminates certain land disposals and exchanges.

Management of special status species, either plant or animal, could place severe restrictions on the location of rights-of-way, other land use authorizations, and limit or eliminate certain disposals and exchanges. Rights-of-way may not be granted or have to be rerouted, resulting in additional disturbance to the landscape. Land tenure adjustments may not be allowed in order to protect special status species habitat.

Management of wildlife or wildlife habitat and fish and aquatic habitat under this alternative would impact rights-of-way and other land use authorizations. In order to protect certain habitats, rights-of-way may not be granted or have to be rerouted making them more costly and resulting in additional disturbance to the landscape. Land tenure adjustments may not be carried out in order to retain high value habitat in Federal ownership.

Managing areas as VRM Class I would eliminate the placement of rights-of-way and other land use authorizations for powerlines and pipelines, since these actions would be a visible change to the landscape. These types of activities would have to be relocated to other areas which could result in longer lines, additional cost, and greater total disturbance to the landscape.

Management of ACEC's, WSA's or other SMA's would have a minimal impact on the placement of rights-of-way since most of the planning area would still be open to new rights-of-way.

Alternative B

Implementation of this alternative would voluntarily restrict the location of facilities if applicants are encouraged to locate within designated corridors. Centralizing could make the facilities more vulnerable to destruction through terrorist activities, but would also confine surface and visual disturbance to existing corridors and rights-of-way. Under this alternative, there would be an increased number of SMA's that would further restrict the location of rights-of-way across the resource area. However, there would be no exclusion areas within the planning area under this alternative.

Impacts from management of special status species, wildlife and wildlife habitat, and fish and aquatic habitat would be the same as for Alternative A.

Management of VRM Class I areas and SMA's would impact rights-of-way the same as under Alternative A.

Alternative C

Under this alternative all linear rights-of-way for electrical transmission lines greater than 69 kilovolt, all mainline fiber optics facilities, and all pipelines greater than 10 inches would be confined to designated corridors. This would centralize all major energy-related transmission facilities, making them more vulnerable to terrorist activities; but would confine surface and visual disturbance to existing corridors. Implementing this alternative would designate all existing electrical transmission lines identified in the "Western Utilities Corridor Study" and some county roads as rights-of-way corridors and reduced the minimum standard

corridor width to 1,000 feet.

The impacts associated with management of special plant and animal species, fish and aquatic habitat, cultural and paleontological resources, VRM Class I and human uses and values would be the same as for Alternative A.

Under this alternative management of wildlife and wildlife habitat and SMA's would consider all greater sage-grouse habitat as rights-of-way avoidance areas and there would be an increase in the number of SMA's over both Alternatives A and B. Also, under this alternative, SMA's would be considered rights-of-way exclusion areas.

Alternative D

The impacts associated with this alternative would be similar to Alternative B, except that greater sage-grouse breeding habitat would be considered rights-of-way avoidance areas. However, rights-of-way which do not conflict with management objectives for the area may be allowed.

Alternative E

Implementation of this alternative would not meet management goal objectives. The entire planning area would be considered a rights-of-way exclusion area.

Summary of Impacts

Alternative A is a continuation of the present situation and is the least restrictive of all the alternatives. Alternative B creates more acreage of SMA's than Alternative A, but fewer than Alternatives C, D, and E. All SMA's under Alternative B are considered avoidance areas, but there are no exclusion zones within the planning area. This alternative designates all existing transmission lines in the "Western Utilities Corridor Study" and some county roads as rights-of-way corridors and establishes a minimum standard corridor width of 2,000 feet. Alternative C is the most restrictive of all the alternatives relative to SMA's, except Alternative E which considers the entire planning area as a rights-of-way exclusion area. This alternative includes all greater sage-grouse habitat as a rights-of-way avoidance area and mandates the location of all new large energy-related transmission facilities within designated corridors. It also reduces the minimum standard corridor width to 1,000 feet. Alternative D is similar to Alternative B, except under this alternative all SMA's and all greater sage-grouse breeding habitat would be considered rights-of-way avoidance areas. Rights-of-way may be allowed if they do not conflict with management objectives. Under Alternative E, the entire planning area would be considered a rights-of-way exclusion area where no new rights-of-way would be allowed. Management goals would be met under all alternatives, except for Alternative E.

Management Goal 3—*Acquire public and administrative access to public land where it does not currently exist.*

Assumptions

Section 205 of the FLPMA authorizes the Secretary to acquire lands and interests in lands consistent with the mission of the department and with applicable departmental land-use plans. Any acquired interest in land would be managed for the purposes for which they were acquired or in the same manner as adjacent or comparable public land. All roadways/improvements constructed as a result of the acquisition of lands or interests in lands would be subject to NEPA review/analysis prior to actual construction.

Analysis of Impacts

Alternative A

Implementing this action would ensure the continued access to public land for administrative purposes, thereby allowing management of resources on all parcels of public land. Constructing new roads around private lands where easement acquisition is not feasible would provide management the flexibility to create access to public lands as necessary.

Alternative B

Under this alternative, the emphasis for acquisition would shift from providing access for administrative purposes to acquiring access to public lands high in commodity value. This would allow access for management, extraction, or use of commodity resources on all the public lands. Implementing this proposal would emphasize constructing new roads around private lands to facilitate commodity development and forego opportunities to access public land with significant public resource values.

Alternative C

Under this alternative, the BLM would acquire access where public demand and administrative need exists, and to construct roads around private land, if necessary

to secure access. Emphasis for access acquisition would be for the protection of natural values.

Alternative D

Under this alternative, access would be acquired where public demand and administrative need exists and to construct roads around private land, if necessary to secure access. Emphasis for access acquisition would be to provide access to public lands containing high public resource values.

Alternative E

Under this alternative new access rights would only be acquired and road construction performed as prescribed and mandated by law and/or for public health and safety.

Summary of Impacts

Alternative A is a continuation of the present situation as it currently exists in the management framework plans. Access acquisition emphasizes providing access to BLM-administrative facilities and program-related activities. Alternative B would provide for acquiring access to public lands high in commodity value; Alternatives C and D would provide for acquiring access to protect natural values and to areas containing high public resource values; and Alternative E would provide for acquiring no new access unless prescribed and mandated by law. All alternatives provide for constructing new roads around private lands when easement acquisition is not feasible. Management goals could be met under all alternatives. However, under Alternative E, meeting the goal would be met only where access is required by law or for public safety.

Management Goal 4—*Utilize withdrawal actions with the least restrictive measures necessary to accomplish the required purposes.*

Assumptions

Section 204 of FLPMA gives the Secretary of the Interior the authority to make, modify, extend, or revoke withdrawals, and mandates review of withdrawals. Department of the Interior Policy (DM 603) requires that: (1) all withdrawals be kept to a minimum, (2) lands shall be available for other public uses to the fullest extent possible, and (3) a current and continuing review of existing withdrawals shall be instituted.

Analysis of Impacts

Alternative A

Alternative A is a continuation of the present situation as it currently exists in the management framework plans.

Alternative B

This alternative would be the least restrictive and not impact commodity- or recreational-related activities. This alternative, however, would afford the least protection of those resources where withdrawal may be deemed necessary.

Alternative C

Withdrawal of the Red Knoll ACEC would render approximately 11,600 acres unavailable for operation under the public land and mining laws, but would be available for mineral leasing.

Alternative D

Withdrawal of these lands would render approximately 4,600 acres unavailable for operation under the public land and mining laws, but would be available for mineral leasing.

Alternative E

Under this alternative the entire resource area would be withdrawn from the public land, mining and mineral leasing laws. This alternative would provide the most resource-related protection.

Summary of Impacts

In accordance with departmental policy, management goals would be achieved under Alternatives A, C,and D. Alternatives B and E are considered to be inconsistent with both management goals and departmental policy. Alternative B would not allow any new lands to be withdrawn unless required by law, and would revoke all existing water reserves. Under Alternative C, the entire Red Knoll ACEC (11,588 acres) would be withdrawn from the public land and mining laws. Under Alternative D, 4,600 acres would be withdrawn. Alternative E would withdraw the entire resource area rendering it unavailable for operation under the public land, mining, and mineral leasing laws. This alternative would provide the most resource-related protection.

Secondary, Indirect, and Cumulative Impacts

Generally, the BLM and other Federal land management agencies operate under a no net loss policy in regard to land tenure adjustments. Therefore, the secondary, indirect, and cumulative impacts relative to this management goal are considered negligible. Most Federal land management agencies having land tenure adjustment programs strive to maintain the private/public land ownership ratio within their respective jurisdictional areas. State land management agencies may not operate under a no net loss policy, and if so, the disposal of state lands without replacement would increase the private land base within the Resource Area.

Generally, with the exception of Alternative E, the secondary, indirect, and cumulative impacts associated with the location of rights-of-way is similar for all the alternatives. Alternatives A through D do not prevent the location of rights-of-way, but restricts the location of some kinds of rights-of-way in certain areas within the resource area to protect resource values. Excluding or avoiding certain areas for the location of rights-of-way may lessen the impact to a particular resource considered of public value, but would not lessen the physical alteration of the landscape necessary to accommodate rights-of-way. The cumulative impact associated with rights-of-way is a function of demand, the number of and acres occupied by the rights-of-way issued. Implementation of any Alternative A through D would not affect the demand for or number of rights-of-way, but only relocate the physical impact of those rights-of-way authorized. The more rights-of-way granted by the land management agencies (Federal and state), as well as private easements, the more cumulative impact to the landscape. Alternative E would presumably not allow the location of new rights-of-way anywhere in the resource area, and therefore, secondary, indirect, and cumulative impacts would be negligible.

The secondary, indirect, and cumulative impacts associated with the acquisition of access rights (easements) and the holders of such rights would include Federal and state land management agencies as well as private entities. Again, implementing any Alternative A through D would not necessarily increase the demand for access acquisition, but would establish the motivation for acquisition. The more easements acquired, through all sources, the more potential for road construction, and consequently, more cumulative impact to the landscape. Alternative E applies exclusively to BLM and would only allow access rights to be acquired as prescribed and mandated by law or necessary to protect public health and safety. Under Alternative E, the secondary, indirect, and cumulative impacts are considered negligible.

BLM is the only Federal agency with the authority to withdraw public lands, therefore all withdrawal requests from other Federal agencies are processed through the BLM. The level of impact associated with withdrawals is relative to the number of acres withdrawn, the restrictiveness of the withdrawal, and the public's position on the issue. Public lands are withdrawn either to set an area aside for a specific use or to afford valuable resources additional protection. Generally, withdrawals will exclude the land from appropriation under the public land, mining, and mineral leasing laws, commodity production, and other human-related uses of the areas.

Roads/Transportation

Management Goal —*Maintain existing roads on the resource area transportation plan and other roads to provide administrative or public access to public land. Construct new roads using best management practices (BMP's) and appropriate mitigation to provide administrative, permitted, and recreational access as needed. Close roads that are not longer needed or that are causing resource damage.*

Assumptions

- Based on past and present road maintenance budgets, approximately 100 miles of roads would be maintained each year regardless of the alternative.
- Not all roads on the transportation plan would be maintained over the life of the plan.

Analysis of Impacts

Alternative A

Continuation of existing management would have no impact on the maintenance of existing roads. An average of approximately 100 miles of roads would continue to be maintained each year. Total number of miles actually maintained would be based on the amount of funding received in the road maintenance budget. Roads not maintained would deteriorate which could result in resource damage such as erosion. Non-maintained roads could also be used less since they would be more difficult to drive thereby providing less

access to the planning area.

New roads would be constructed on a case-by-case, as-needed basis. Construction of roads around private lands to access BLM-administered lands would provide legal public access for recreationists as well BLM personnel. This could reduce conflicts with private landowners and reduce damage to private lands. New roads could be constructed across BLM-administered land by other land holders under a rights-of-way grant to access non-Federal land. In any case, it is not expected that total new construction would exceed 20 miles over the life of the plan.

Roads would be closed on a case-by-case basis under this alternative. Generally, only those roads or portions of roads causing major resource damage would be closed. Approximately 235 miles of road would continue to be closed under this alternative (Table 4-4).

Alternative B

Impacts of road maintenance and new road construction under this alternative would be similar to those under Alternative A. Priorities for maintenance would be those roads that would facilitate commodity production in the planning area. Under this alternative, any new roads constructed on BLM-administered land, whether constructed by BLM, another agency, or a private individual, would be constructed according to BMP's (see Appendix D) to protect adjacent land and resources.

Impacts of road closures would be the same as under Alternative A (Table 4-4).

Alternative C

Under this alternative the priorities for road maintenance would be those roads that are causing resource damage such as erosion. As a result resource damage caused by roads would decrease. Construction of roads around private lands to access BLM-administered lands would provide legal public access for recreationists as well BLM personnel. This could reduce conflicts with private landowners and reduce damage to private lands. New road construction whether for BLM needs or to access non-Federal land would be minimal under this alternative and would likely not exceed 10 miles over the life of the plan. Any new roads constructed on BLM-administered land, whether constructed by BLM, another agency, or a private individual, would be constructed according to BMP's to protect soil, watershed, riparian areas, and other resources. New roads would not be constructed in or near riparian conservation areas. This would limit to a small extent the placement of new roads.

There would be a concerted effort to close unneeded or damaging roads under this alternative. As a result, road closures would be greatest under this alternative. Approximately 502 miles of roads would be closed in SMA's (Table 4-4). Roads closed but not rehabilitated could still be used for authorized or permitted purposes. Roads closed and rehabilitated, either naturally or artificially would be closed to any future traffic. This would reduce vehicle access to certain parts of the planning area, particularly ACEC's.

Alternative D

Impacts would be the same as under Alternative C, except that road closures would be less. An estimated412 miles of roads in SMA's would be closed under this alternative (Table 4-4).

Alternative E

Impacts under this alternative would be minimal since maintenance would occur only to protect human health and safety or only on those roads required by law to be open. This criteria would apply to very few roads in the planning area. New roads would not be constructed unless required by law or to provide access to non-Federal property. Such construction would not exceed 20 miles over the life of the plan. Any new roads constructed on BLM-administered land, whether constructed by BLM, another agency, or a private individual, would be constructed according to BMP's to protect soil, watershed, riparian areas, and other resources.

With the removal of livestock grazing and all range improvements, a number of unneeded roads, ways, and trails could be closed under this alternative. Up to 10 percent of existing roads could be closed over the life of the plan.

Summary of Impacts

Impacts would be similar under all alternatives with the fewest impacts occurring under Alternative E and the most potentially occurring under Alternative B. Priorities for maintenance would vary across the alternatives but would depend primarily on the road maintenance budget each year. Not all roads would be maintained over the life of the plan under any of the alternatives. As a result, some roads could deteriorate to the point of causing resource damage or being impassable.

New road construction would not exceed 20 miles under any alternative, but would be least under Alternatives C, D, and E. In Alternatives B–E, new construction or reconstruction would be done according to BMP's to protect adjacent resources.

The management goal would be met under all the alternatives except for Alternative E.

Road closures would occur under all alternatives with the most miles of closure occurring under Alternative C. Most of these closures would be associated with special management areas such as ACEC's.

Secondary, Indirect, and Cumulative Impacts

Roads that are not maintained over the life of the plan because of lower priorities could deteriorate to the point that they would be impassable thereby reducing access to some parts of the planning area. Often these types of roads eventually cause resource damage such as erosion.

New road construction could open parts of the planning area that currently do not have access. This could result in increased use by recreationists that could result in wildlife disturbance, soil and vegetation disturbance that could increase erosion, and loss of solitude in an area.

The Fremont National Forest has an active ongoing program of closing roads that are not needed for commercial or administrative purposes or that may be causing resource damage. This program coupled with road closures that BLM would do could have a significant positive impact on particular watersheds by reducing access resulting in less compaction, less vegetation disturbance, and less erosion. These effects would be most beneficial in those watersheds shared by both BLM and the Fremont National Forest.

Chapter 5 — Consultation and Coordination

Introduction

The Draft Lakeview Resource Management Plan/ Environmental Impact Statement (Lakeview RMP/EIS) was prepared by an interdisciplinary team of resource specialists from the Lakeview District Office. Initial preparation for the plan began in 1997. The planning process began in earnest in early 1999 with the training of the interdisciplinary team (February) and the hiring of an interdisciplinary RMP team leader. A scoping packet was developed and mailed to the public, local governments, and organizations. In July 2000, the "Summary of the Analysis of the Management Situation" was mailed to agencies, organizations, and individuals.

Public Participation

The official start of the preparation of the Lakeview RMP/EIS was initiated with the publishing of a "Notice of Intent" to prepare an RMP/EIS in the *Federal Register* on June 21, 1999. This notice also included an invitation to the public to suggest issues to be addressed in the RMP and to provide comments concerning management of the public lands. In addition, approximately 500 public information or scoping packets, providing information about the planning process and inviting comments, were mailed to agencies, organizations, and individuals. News releases were sent to newspapers and radio stations in both Klamath Falls and Lakeview. Paid notices announcing the scoping period and meetings were placed in the legal notices sections of the two newspapers. The "Notice of Intent," news releases, and legal notices identified the beginning of the EIS scoping period and the location, date, and time of the public scoping meetings. The comment period extended from June 21 through July 31, 1999.

The public scoping meetings were held at the interagency office in Lakeview on July 13, 1999, and at the North Lake School on July 14, 1999. Seven people, including private citizens, mining company managers, representatives of two State agencies, and a newspaper reporter attended the meeting in Lakeview. No one attended the meeting in North Lake County. Six written comments or letters were received at the meetings or during the comment period. These comments dealt primarily with designation of special management areas, preserving and protecting the naturalness of the resource area, and maintaining air quality in relation to prescribe burning. These comments were incorporated into the alternatives and the impact analysis of the Lakeview RMP/EIS.

Although technically not part of the public participation process, a subbasin review was conducted prior to completing the "Analysis of the Management Situation." The subbasin review was a multi-agency collaborative effort to "step down" to the local level the findings and assessments of the Interior Columbia Basin Ecosystem Management Project (ICBEMP) (see Appendix A). In other words, did the findings from ICBEMP have any meaning to the Lakeview RMP planning area? The subbasin review group determined that many of them did, and these were incorporated into the issues addressed in this plan.

The "Summary of the Analysis of the Management Situation" was prepared after the subbasin review and mailed to the planning mailing list in July 2000. It contained a description of the preliminary issues, alternatives, and planning criteria, as well as the resource area profile, existing management situation, and management opportunities. The public was requested to comment on the information in the document, particularly the issues, alternatives, and planning criteria. The RMP team received approximately 60 comment letters and emails. The majority of these comments dealt with the management opportunities identified for the Public Sunstone Collecting Area. Other comments dealt with potential management actions under the proposed alternatives. All comments were considered in developing the alternatives for the draft Lakeview RMP/EIS. See Table 5-1 for a summary of key events.

Table 5-1.— *Summary of key public involvement events*

Date	Event
01-22-98	Southeastern Oregon Resource Advisory Council: briefing on proposed joint interagency planning effort with the U.S. Forest Service (USFS).
12-16-98	Lake County Commissioners: briefing on preparation of the RMP/EIS, initiation of scoping period and schedule for 1999.
01-23-99	Fort Bidwell Paiute Tribal Council: briefing on preparation of the RMP/EIS.
01-27-99	Southeastern Oregon Resource Advisory Council: briefing on preparation of the RMP/EIS.
03-09-99	Burns Paiute Tribal Council: briefing on preparation of the RMP/EIS.
03-17-99	Lake County Commissioners: update on RMP/EIS, issues and schedule, preparing the analysis of the management situation.
04-29-99	Southeastern Oregon Resource Advisory Council: update on RMP/EIS, issues, and areas of critical environmental concern (ACEC's), and preparing the analysis of the management situation.
05-25-99	Klamath Tribes Executive Committee: discussed RMP/EIS and the subbasin review process.
06-21-99	Notice of intent published in the *Federal Register*.
06-25-99	Public scoping packets mailed to approximately 500 recipients.
07-13-99	Public scoping meeting in Lakeview.
07-14-99	Public scoping meeting in north Lake County.
07-21-99	Lake County Commissioners: update on RMP/EIS scoping meetings, issues and ACEC's.
07-27-99	Southeastern Oregon Resource Advisory Council: update on RMP/EIS scoping meetings, issues, and ACEC's.
07-31-99	Formal public scoping period closed.
08-05-99	First subbasin review meeting.
08-18-99	Harney County Court: initial briefing on the RMP/EIS; issues and schedule.
09-08-99	Second subbasin review meeting.
10-15-99	Southeastern Oregon Resource Advisory Council: update on RMP/EIS, analysis of the management situation preparation, and subbasin review.
11-09-99	Third subbasin review meeting.
12-01-99	Lake County Commissioners: Update on RMP/EIS, analysis of the management situation preparation and subbasin review.
12-17-99	Klamath Tribes Executive Committee (Alan Foreman): Update on RMP/EIS and subbasin review findings to date.
01-04-00	Fourth subbasin review meeting.
01-25-00	Southeastern Oregon Resource Advisory Council: Update on the analysis of the management situation preparation and subbasin review.
02-09-00	Fifth subbasin review meeting.
02-16-00	Lake County Commissioners: Update on the analysis of the management situation preparation and subbasin review.
02-19-00	Fort Bidwell Paiute Tribal Council: Update on the analysis of the management situation preparation and subbasin review.
02-22-00	Klamath Tribes Executive Committee: Update on the analysis of the management situation preparation and subbasin review.
04-05-00	Harney County Court: Update on completion of the analysis of the management situation and subbasin review.

Date	Event
05-17-00	Lake County Commissioners: Update on completion of the analysis of the management situation and beginning RMP/EIS alternatives.
07-19-00	Southeastern Oregon Resource Advisory Council: Field trip to Lost Forest/Sand Dunes/Fossil Lake ACEC.
07-19-00	"Summary of the Analysis of the Management Situation" mailed to the resource area mailing list.
07-20-00	Southeastern Oregon Resource Advisory Council: Presentation of preliminary RMP/EIS alternatives.
08-26-00	Fort Bidwell Tribal Council: Presented completed analysis of the management situation and discussed preliminary alternatives (met with partial council).
09-19-00	Klamath Tribes Executive Committee: Presented completed analysis of the management situation and discussed preliminary alternatives and ACEC's.
09-20-00	Harney County Court: Presented completed analysis of the management situation and discussed preliminary alternatives and ACEC's.
09-20-00	Lake County Commissioners: Presented completed analysis of the management situation and discussed preliminary alternatives and ACEC's.
10-19-00	Southeastern Oregon Resource Advisory Council: Presented completed alternatives.
12-07-00	Southeastern Oregon Resource Advisory Council RMP Subcommittee: Presented alternatives to the subcommittee for their review and comments.
01-22-01	Southeastern Oregon Resource Advisory Council: Discussed subcommittee comments on alternatives with entire committee.
01-24-01	Burns Paiute Tribal Council: Presented alternatives to the Tribal council.
02-06-01	Klamath County Commissioners: Presented summary of the RMP to date.
02-07-01	Lake County Commissioners: Presented summary of actions by alternatives.
02-09-01	Klamath Tribes Executive Committee: Presented summary of actions by alternatives.
02-14-01	Staff of Congressman Walden and Senator Wyden: Presented summary of the RMP to date.
02-21-01	Harney County Court: Presented summary of actions by alternatives.
02-24-01	Fort Bidwell Tribal Council: Presented summary of RMP with emphasis on ACEC's for cultural management and disposal of two cemetery sites to local Tribes.
04-05-01	Southeastern Oregon Resource Advisory Council RMP subcommittee: Discussed Chapter 4, Environmental Consequences.
04-23-01	Southeastern Oregon Resource Advisory Council: Discussed subcommittee comments on environmental consequences with entire committee.
06-01-01	Lake County Commissioners and Congressman Greg Walden: RMP status update.
07-09-01	Southeastern Oregon Resource Advisory Council: RMP status update and schedule for publication.
07-20-01	Klamath, Lake, Modoc, and Siskiyou Outdoor Recreation Working Group: Summarized RMP and discussed proposals relating to outdoor recreation.
08-13-01	Lake County Chamber of Commerce: Summarized RMP process to date and proposals that could most affect the county economy.

Agencies and Organizations Contacted or Consulted

Oregon Department of Wildlife
Fort Bidwell Paiute Tribal Council
Burns Paiute Tribal Council
Klamath Tribes Executive Committee
Lake County Commissioners
Harney County Court
Southeastern Oregon Resource Advisory Committee
Wildlife Management Institute
U.S. Fish and Wildlife Service
Oregon Natural Resources Council
State of Idaho Department of Environmental Quality
U.S. Forest Service, Fremont National Forest

Agencies, Organizations, and Individuals on Mailing List

The resource area mailed the public scoping packet to approximately 500 agencies, organizations, and individuals. The "Summary of the Analysis of the Management Situation" was mailed to the same number. The current mailing list includes approximately 1,000 names of agencies, organizations, and individuals to which this draft Lakeview RMP/EIS was sent. The following list is representative of the entities on the mailing list:

Elected Officials

U.S. Senator Ron Wyden
U. S. Senator Gordon Smith
Congressman Greg Walden
Governor John Kitzhaber
State Senator Eugene Timms
Harney County Judge and Court
Klamath County Commissioners
Lake County Commissioners
Humboldt County Board of Commissioners
Modoc County Commissioners

Tribal Groups

Klamath Tribes Tribal Council
Fort Bidwell Paiute Tribal Council
Burns Paiute Tribal Council
Confederated Tribes of the Warm Springs Reservation
Fort McDermitt Tribal Council

Agencies

Bureau of Reclamation
Bonneville Power Administration
Natural Resources Conservation Service
U.S. Fish and Wildlife Service
Oregon Department of Wildlife
Oregon Department of Forestry
Oregon Department of Water Resources
Oregon Department of Agriculture
Oregon Division of State Lands
U.S. Environmental Protection Agency
U.S. Army Corps of Engineers
State Historic Preservation Officer
U.S. Geological Survey
Oregon Parks and Recreation Department
U.S. Forest Service, Region 6
U.S. Forest Service, Modoc National Forest
Oregon Department of Transportation

Organizations

American Lands Rights Association
American Rivers Council
Desert Research Institute
Ducks Unlimited
Oregon High Desert Museum
The Nature Conservancy
Oregon Cattleman's Association
Oregon Natural Resources Council
Sierra Club
National Wildlife Federation
Wildlife Management Institute
Minerals Exploration Coalition
Society for Range Management
Southern Oregon Timber Industry Association
The Wilderness Society
Western Forest Industries Association
Wild Horse Organized Assistance
Oregon Natural Desert Association
Natural Resources Defense Council
Klamath Soil and Water Conservation District
Beaty Butte Grazing Association
Izaak Walton League
Oregon Trout
Public Lands Council
Native Plant Society of Oregon
Trout Unlimited
Audubon Society

Others

Livestock grazing permittees
Special recreation permittees
Recreation users
Interested public
Various businesses

Preparers

Table 5-2 lists the primary members of the Lakeview District Interdisciplinary Team who were responsible for the preparation of this document.

Table 5-2.—*Lakeview District Interdisciplinary Team*

Name and title	Education	Experience includes:
Albertson, Kristi *Editorial Assistant*	In progress; Western Baptist College	Proofreading/editing school publications.
Boothe, Les *Rangeland Management Specialist*	B.S., Range Management, University of Wyoming; M.S., Range Science, Colorado State University	Horse and cattle nutrition studies at Colorado State University. Wrote chapters for EIS on, and developed and implemented reclamation plans for coal mines, and conducted vegetation inventories and monitoring studies before and after mining for Kaiser Steel Corporation. Designed and conducted vegetation monitoring studies, developed and implemented several allotment management plans, including writing and EIS, participated in the design and construction of many range improvements. Assisted in writing several biological assessments and a watershed analysis.
Cannon, William James *Resource Area Archaeologist*	B.A., Anthropology, Portland State University; M.A., Anthropology, Portland State University	Specialization in rock art research, Northern Great Basin archaeology, Native American issues, and experience in Northern Great Basin archaeology and Native American issues.
Florence, Scott *Field Manager*	B.S., Range Science, Washington State University	BLM range conservationist, wildlife biologist, supervisory natural resource management specialist and field (area) manager.
Forbes, Todd *Wildlife Biologist*	B.S., Wildlife Science, Oregon State University	Positions as wildlife biological technician and wildlife biologist with the USFS and with the BLM resource area.
Frewing-Runyon, Leslie *Regional Economist*	B.A., Economics, Willamette University	BLM economist and interdisciplinary team membership on numerous EIS's, including several interagency projects throughout Oregon and Washington.
Hollenkamp, Dan *Outdoor Recreation Planner*	B.S., Environmental Studies, M.A., Environmental Studies, Bemidji State University	Planning and management of developed and dispersed recreation, wilderness management, WSA's, ACEC's, off-highway vehicles, visual resource management, FERC relicensing, lands special uses, recreation permitting, NEPA compliance, trails maintenance and construction, and cave management.
Hollenkamp, Tavia *Writer/Editor*	B.A., English, B.S. Education, Bemidji State University; M.A., English University of Tennessee	USFS regional writer/editor and public affairs officer in Alaska; writer for USFS, Washington, D.C.

Name and title	Education	Experience includes:
Hopper, Robert *Supervisory Rangeland Management Specialist*	B.S., Range Management/Wildlife Option, Washington State University	Planning, plan amendments, allotment management plans, coordinated resource management plans, soils classification, ecological site inventory, grazing management, grazing, system development/implementation, and vegetation manipulation and public land restoration. District and resource area range program leader.
Housley, Lucile *Botanist*	B.A., Plant Taxonomy and Ecology, Pomona College; M.S., Botany, Claremont Graduate School	Field botanist; botany, ecology, and ethnobotany; Executive Director Malheur Field Sation, Harney County, Oregon.
Johnson, Bill *Silviculture Forester*	B.S., Forest Management, University of Minnesota	Forest development and timber management forester in western Oregon, district forest lead in eastern Oregon, and silviculture forester in Klamath Falls, Oregon.
Lindaman, Trish *Recreation Technician*	B.S., Recreation Education, University of Iowa	Management of developed and dispersed recreation, visual resource management, WSR's, WSA's, wilderness, ACEC's, and caves (USFS, NPS, and BLM).
Machado, Barbara *Hydrologist*	B.S., Geology, California State University-Chico	Planning and management of soil and water resources. Includes positions with the USGS, Water Resources Division, U.S. Forest Service and BLM.
McConnell, Erin *Noxious Weed Specialist*	B.S., Forestry/Recreation Management Emphasis, Oregon State University; M.S., Weed Science, *in progress*, Utah State University	Noxious weed specialist BLM, techical positions in range, recreation, and fire, biological control of weeds research, plant propagator with USDA/ARS, county park planner, environmental education.
Munhall, Alan *Fisheries Biologist*	B.S., Wildlife Management, B.S., Range Management, Oregon State University	Planning and management of wildlife, fisheries, and range programs—especially related to riparian, aquatic, and fisheries resources.
Platt, James *Civil Engineer*	B.S., Civil Engineering, University of California, Berkeley	Facilities, roads, and transportation management.
Pollet, Jolie *Fire Ecologist*	B.A., Geography, University of New Orleans; M.S., Forestry (Forest Fire Sciences), Colorado State University	Assessment and planning to restore natural role of fire to fire-dependent ecosystems.
Romasko, Theresa *Range Management Specialist*	B.S., Forestry/Range Management, University of Montana	Range and forestry positions with USFS in Montana and rangeland management positions with the BLM in Wyoming, Montana, and Oregon.
Simontacchi, Dennis *Geologist*	B.A., Geology, University of California, Davis	Geologist for BOR and BLM; State of Oregon registered geologist and registered engineering geologist.

Name and title	Education	Experience includes:
Stewardson, Dan *Realty Specialist*	B.S., Wildlife Management, Humboldt State University	Range conservationist and realty specialist with BLM in Colorado, Montana, Nevada, and Oregon.
Stoffleth, Vern *Wildlife Biologist*	B.S., Wildlife Management, Oregon State University	Seasonal fishery biologist for the ODFW (4 seasons). BLM positions have included wildlife biologist for Lakeview Resource Area in Oregon and wildlife biologist for Valley Resource Area in Montana. Served as resource management plan wildlife lead for both documents and numerous EIS's.
Sykes, Dwayne *Interdisciplinary Planner*	B.S., Wildlife Science, New Mexico State University	Range management, wildlife management, wilderness, recreation management, and planning and environmental coordination.
Taylor, Maple A. *Writer/Editor*	B.S., Wildlife Science, New Mexico State University; M.S., Range and Wildlife Management, Texas Tech University	State and Federal range and wildlife research, and technical and popular writing/editing for publication.
Thompson, Jim *Geographic Information System Specialist*	B.S., Environmental Science, Western Washington University; Geographic Information Systems Certificate, Green River Community College	Geographic information systems support for RMP's; prepare maps; create, maintain, and edit appropriate geographic information systems databases.
Tillman, Kenneth G. *District HAZMAT Coordinator/Natural Resource Specialist*	B.S., Agriculture, Chico State University	Ranch foreman; BLM range conservationist, team leader ecological site inventory/ soil/vegetative inventory crew (Oregon), hazardous materials/surface protection specialist.
Webb, Matt *Fire Management Specialist*	B.S., Microbiology, Weber State University	General fire management and prescribed fire and fuel management implementation and planning with BLM and USFS.
Whitman, Paul *Planning, Environmental, and Geographic Information System Coordinator*	B.A., Biological Science, Illinois Wesleyan University; M.S., Zoology, Southern Illinois University-Carbondale	Ecologist and wildlife biologist conducting environmental impact and geographic information systems analyses for the U.S. Army Corps of Engineers. Provide land use planning, environmental impact analysis, and geographic information systems support for the BLM.

Chapter 6 — Glossary, References, and Index

Glossary

Active preference ~ That portion of the total grazing preference for which grazing use may be authorized.

Activity planning ~ Site-specific planning which precedes actual development. This is the most detailed level of BLM planning.

Actual use ~ The amount of animal unit months (AUM's) consumed by livestock based on the numbers of livestock and grazing dates submitted by the livestock operator and confirmed by periodic field checks by the BLM.

Adit ~ A horizontal, or nearly horizontal, passage from the surface by which a mine is worked or dewatered.

Adjustments ~ Changes in animal numbers, periods of use, kinds or class of animals or management practices as warranted by specific conditions.

Allotment ~ An area of land where one or more livestock operators graze their livestock. Allotments generally consist of BLM lands but may also include other federally managed, state owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Allotment categorization ~ Grazing allotments and rangeland areas used for livestock grazing are assigned to an allotment category during resource management planning. Allotment categorization is used to establish priorities for distributing available funds and personnel during plan implementation to achieve cost-effective improvement of rangeland resources. Categorization is also used to organize allotments into similar groups for purposes of developing multiple use prescriptions, analyzing site-specific and cumulative impacts, and determining trade-offs.

Allotment management plan ~ A written program of livestock grazing management, including supportive measures if required, designed to attain specific management goals in a grazing allotment.

Allowable sale quantity ~ formerly "allowable cut"; the volume that a sustained yield unit can produce annually under an approved land use plan.

Analysis of the management situation ~ Step 4 of the BLM's land use planning project; it is a comprehensive documentation of the present conditions of the resources, current management guidance, and opportunities for change.

Animal unit month (AUM) ~ A standardized measurement of the amount of forage necessary for the sustenance of one cow unit or its equivalent for 1 month (approximately 800 pounds of forage).

Appropriate management level ~ The optimum number of wild horses and burros that contributes to a thriving natural ecological balance on public lands and protects the range from deterioration.

Appropriate management response ~ Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Aquatic ~ Living or growing in or on the water.

Archaeological quarry sites ~ Places where minerals occur which were a source of raw material for prehistoric/historic industries.

Area of critical environmental concern (ACEC) ~ 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.

Avoidance areas ~ Areas with sensitive resource values where rights-of-way and Section 302 permits, leases, and easements would be strongly discouraged. Authorizations made in avoidance areas would have to be compatible with the purpose for which the area was designated and not be otherwise feasible on lands outside the avoidance area.

Back country byways ~ Vehicle routes that traverse scenic corridors utilizing secondary or back country road systems. National back country byways are designated by the type of road and vehicle needed to travel the byway.

Best forest management practices ~ General forest management practices which are consistent for all timber harvest and treatment activities.

Best management practices (BMP's) ~ A set of practices which, when applied during implementation

of management actions, ensures that negative impacts to natural resources are minimized. BMP's are applied based on site-specific evaluations and represent the most effective and practical means to achieve management goals for a given site.

Biomass ~ Vegetative material leftover from stand treatments. This term usually refers to such material that can be gathered and transported to cogeneration plants, and there utilized for production of electricity.

Board feet ~ A unit of solid wood one foot square and one inch thick.

Broad scale ~ A large, regional area, such as a river basin; typically a multi-state area.

Browse ~ To browse (verb) is to graze a plant; also, browse (noun) is the tender shoots, twigs and leaves of trees and shrubs often used as food by livestock and wildlife.

Buffer strip ~ A protective area adjacent to an area of concern requiring special attention or protection. In contrast to riparian zones which are ecological units, buffer strips can be designed to meet varying management concerns.

Bunchgrass ~ Individual grasses that have the characteristic growth habit of forming a "bunch" as opposed to having stolens or rhizomes or single annual habit.

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

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

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.

Carrying capacity ~ The maximum stocking rate possible without damaging vegetation or related resources.

C Category ~ Custodial management (see "selective management categories").

CCC ~ Consultation, cooperation and coordination: an interactive process for seeking advice, agreement, or interchange of opinions on issues, plans, or management actions from other agencies and affected permittee(s) or lessee(s), landowners involved, the district grazing advisory boards where established, any state having lands within the area to be covered by an allotment management plan and other affected interests.

Channel ~ An open conduit either naturally or artificially created which periodically or continuously contains moving water or forms a connecting link between two bodies of water.

Channel stability ~ A relative term describing erosion or movement of the channel walls or bottom due to waterflow.

Cinnabar ~ The mineral mercuric sulfide; an ore of mercury.

Class I cultural inventory ~ An inventory of the existing literature and a profile of the current data base for cultural resources; frequently utilized to guide field inventories.

Class II cultural inventory ~ A sample-oriented field inventory which is representative of the range of cultural resources within a finite study area.

Class Ill cultural inventory ~ An intensive field inventory designed to locate and record, from surface and exposed profile, all cultural resources within a specified area.

Climax ~ The culminating stage in plant succession for a given site where vegetation has reached a highly stable condition.

Closed area designation ~ An area where off-highway vehicle (OHV) use is prohibited. Use of OHV's in closed areas may be allowed for certain reasons; however, such use shall be made only with the approval of the authorized officer.

Commercial (productive) forest land ~ Forest land which is producing, or has a site capable of producing, at least 20 cubic feet/acre/year of a commercial tree species.

Commercial tree species ~ Tree species whose yields are reflected in the allowable cut: pines, firs, spruce, Douglas-fir, and larch.

Competitive forage ~ Those forage species utilized by two or more animal species.

Conditional suppression ~ Suppression actions based on predetermined, stringent conditions, i.e., fire location, weather condition, forces available, and fire size. Monitoring must be done throughout the fire's duration and direct suppression will be taken if any one condition is exceeded.

Critical growth period ~ A specified period of time in which plants need to develop sufficient carbohydrate reserves and produce seed (approximately the months of May and June for bluebunch wheatgrass).

Critical habitat ~ The area of land, water, and airspace required for the normal needs and survival of a federally listed threatened or endangered species.

Cultural plants ~ Plants traditionally used by Native Americans for subsistence, economic, or ceremonial purposes.

Cultural resources ~ Fragile and nonrenewable elements of the physical and human environment including archaeological remains (evidence of prehistoric or historic human activities) and sociocultural values traditionally held by ethnic groups (sacred places, traditionally utilized raw materials, etc.).

Cultural site ~ Any location that includes prehistoric and/or historic evidence of human use, or that has important sociocultural value.

Dacite ~ A fine-grained extrusive rock with the same composition as its intrusive equivalent, granodiorite.

Dead-end road ~ A road that extends into a wilderness study area (WSA) but is excluded from the WSA by means of drawing the WSA boundary around the road.

Deferment ~ The withholding of livestock grazing until a certain stage of plant growth is reached.

Deferred grazing ~ Discontinuance of livestock grazing on an area for specified period of time during the growing season to promote plant reproduction, establishment of new plants, or restoration of the vigor by old plants.

Deferred rotation grazing ~ Discontinuance of livestock grazing on various parts of a range in succeeding years, allowing each part to rest successively during the growing season. This permits seed production, establishment of new seedlings, or restoration of plant vigor. Two, but more commonly three or more, separate pastures are required.

Diatomite ~ An accumulation of microscopic siliceous skeletons of aquatic plants (diatoms).

Discretionary closures ~ Areas where the BLM has determined that energy and/or mineral leasing, entry or disposal, even with the most restrictive stipulations or conditions would not be in the public interest.

Dispersed/extensive recreation ~ Recreation activities of an unstructured type which are not confined to specific locations such as recreation sites. Example of these activities may be hunting, fishing, off-road vehicle use, hiking, and sightseeing. Minimal management actions related to the Bylaws' stewardship responsibilities are considered adequate in the areas where extensive recreation takes place and explicit recreation management is not required.

Disposal ~ Any BLM authority which transfers title out of public ownership.

Distribution ~ The uniformity of livestock grazing over a range area. Distribution is affected by the availability of water, topography, and type and palatability of vegetation as well as other factors.

Drainage (internal soil) ~ The property of a soil that permits the downward flow of excess water. Drainage is reflected in the number of times and in the length of time water stays in the soil.

Ecological site inventory ~ The basic inventory of present and potential vegetation on BLM rangelands. Ecological sites are differentiated on the basis of significant differences in kind, proportion, or amount of plant species present in the plant community. Ecological site inventory utilizes soils, the existing plant community, and ecological site data to determine the appropriate ecological site for a specific area of rangeland and to assign the appropriate ecological status.

Ecological status ~ Ecological status is the present state of vegetation of a range site in relation to the potential natural community for that site. It is an expression of the relative degree to which the kinds, proportions and amounts of plants in a plant community resemble that of the potential natural plant community for the site. Four classes are used to express the degree to which the production or composition of the present plant community reflects that of the potential natural community (climax). Departures from climax

can enhance or depreciate the value of the resultant plant community for various uses.

Ecological status (seral stage) ~ Percentage of present plant community that is climax for the range site:

Potential natural community	76–100
Late seral	51–75
Mid seral	26–50
Early seral	0–25

Ecosystem ~ A complete, interacting system of living organisms and the land and water that make up their environment; the home places of all living things, including humans.

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.

Endangered species ~ A plant or animal species whose prospects for survival and reproduction are in immediate jeopardy, as designated by the Secretary of the Interior, and as is further defined by the "Endangered Species Act."

Environmental assessment ~ One type of document prepared by Federal agencies in compliance with the "National Environmental Policy Act" (NEPA) which portrays the environmental consequences of proposed Federal actions which are not expected to have significant impacts on the human environment.

Environmental impact statement (EIS) ~ One type of document prepared by Federal agencies in compliance with NEPA which portrays the environmental consequences of proposed major Federal actions which are expected to have significant impacts on the human environment.

Ephemeral stream ~ A stream that flows only after rains or during snowmelt.

Erosion ~ The wearing away of the land surface by running water, wind, ice, or other geological agents.

Exchange of use ~ Grazing authorization issued to a permittee free of charge for unfenced, intermingled private lands within an allotment.

Exclusion area ~ Areas with sensitive resource values where rights-of-way and 302 permits, leases, and easements would not be authorized.

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.

Extensive recreation management area ~ Areas where significant recreation opportunities and problems are limited and explicit recreation management is not required. Minimal management actions related to the Bureau's stewardship responsibilities are adequate in these areas.

Evaporite ~ A sedimentary rock composed primarily of minerals produced from a saline solution as a result of extensive or total evaporation of seawater or inland lakes.

Federal candidate species ~ See "special status species."

Federal Land Policy and Management Act of 1976 (FLPMA) ~ Public Law 94-579. October 21, 1976, often referred to as the BLM' s "Organic Act," which provides the majority of the BLM's legislated authority, direction, policy, and basic management guidance.

Fine scale ~ A single landscape, such as a watershed or subwatershed.

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.

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.

Floodplain ~ The relatively flat area or lowlands adjoining a body of standing or flowing water which has been or might be covered by floodwater.

Forest land ~ Land that is now, or has the potential of being, at least 10 percent stocked by forest trees (based on crown closure) or 16.7 percent stocked (based on tree stocking).

Fossil ~ Mineralized or petrified form from a past

geologic age, especially from previously living things.

Grazing system ~ The manipulation of livestock grazing to accomplish a desired result.

Greenstripping ~ The practice of establishing or using patterns of fire resilient vegetation and/or material to reduce wildland fire occurrence and size. This practice also breaks up monocultures such as cheatgrass areas, and creates some biodiversity.

Ground cover ~ Vegetation, mulch, litter, rock, etc.

Groundwater ~ Water contained in pore spaces of consolidated and unconsolidated surface material.

Habitat ~ A specific set of physical conditions that surround a species, group of species, or a large community. In wildlife management, the major constituents of habitat are considered to be food, water, cover, and living space.

Herd area ~ The geographic area identified as having been used by wild horse or burro herds as their habitat in 1971.

Herd management area ~ Public land under the jurisdiction of the BLM that has been designated for special management emphasizing the maintenance of an established wild horse herd.

Herd management area plan ~ An action plan that prescribes measures for the protection, management, and control of wild horses and burros and their habitat on one or more herd management areas, in conformance with decisions made in approved management framework or resource management plans.

Historic ~ Refers to period wherein nonnative cultural activities took place, based primarily upon European roots, having no origin in the traditional Native American culture(s).

I Category ~ Improve management (see "selective management categories").

IMP ~ (Wilderness) interim management policy for lands under wilderness review.

Interior Columbia River Basin Ecosystem Management Project (ICBEMP) ~ An ongoing project 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.

Intermittent stream ~ A stream which flows most of the time but occasionally is dry or reduced to pool stage.

Initial (fire) attack ~ An aggressive fire suppression action consistent with firefighter and public safety and values to be protected.

Instant study area ~ A BLM primitive or natural area designated before November 1, 1975, subject to wilderness review under section 603(a) of FLPMA.

Interdisciplinary ~ Involving more than one discipline or resource management program; promotes resource management at a plant community, landscape, or ecosystem level.

Intermediate ~ Said of an igneous rock that is transitional between basic and silicic; an intermediate rock generally has a silica (silicon dioxide) content of 54 to 65 percent.

Invasive juniper ~ Juniper stands less than 130 years old, which have expanded to other vegetative sites due mainly to human-induced exclusion of natural fire.

Issue ~ A subject or question of widespread public discussion or interest regarding resource area management, identified through public participation.

Lacustrine ~ Pertaining to, formed in, growing in, or inhabiting lakes.

Land classification ~ A process required by law for determining the suitability of public lands for certain types of disposal or lease under the public land laws or for retention under multiple use management.

Land treatment ~ All methods of range improvement and soil stabilization such as reseeding, brush control (burning and mechanical), pitting, furrowing, water spreading, etc.

Land use authorizations ~ Those realty-related authorizations such as leases, permits, and easements authorized under section 302(b) of FLPMA and the "Recreation and Public Purpose Act."

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

Limited area designation ~ An area restricted at certain times, in certain areas, and/or to certain vehicular use. These restrictions may be of any type, but can

generally be accommodated within the following categories: number of vehicles, types of vehicles, time or season of vehicle use, permitted for licensed use only, use on existing roads and trails, use on designated roads and trails, and other restrictions.

Livestock forage condition ~ Based on percent of desirable forage in the composition for livestock and the existing erosion condition of a site. Condition of the range must include consideration of vegetation quality and quantity and soil erosion characteristics.

Livestock operation ~ The management of a ranch or farm so that a significant portion of the income is derived from the continuing production of livestock.

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 resource management plan/EIS preparation process, are recognized as needing to be modified or needing decisions made regarding management direction.

Marlaceous ~ Containing calcareous clay or mixture of clay and particles of calcite or dolomite, usually contains fragments of shells.

Management framework plan ~ Older generation of land use plans developed by the BLM; this generation of planning has been replaced by the RMP.

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.

M Category ~ Maintain management (see "selective management categories").

Microbiotic crusts ~ Lichens, mosses, green algae, fungi, cyanobacteria, and bacteria growing on or just below the surface of soils.

Mineral entry ~ The location of mining claims by an individual to protect his right to a valuable mineral.

Mineral estate ~ Refers to the ownership of minerals at or beneath the surface of the land.

Mitigation measures ~ Methods or procedures committed to by BLM for the purpose of reducing or lessening the impacts of an action.

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.

Motorized equipment ~ Any machine activated by nonliving power source except small battery-powered, hand-carried devices such as flashlights, shavers, Geiger counters, and cameras.

Motor vehicle ~ Any vehicle which is self-propelled or any vehicle which is propelled by electric power obtained from batteries.

Multiple use ~ The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.

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

National Register of Historic Places ~ A register of districts, sites, buildings, structures, and objects, significant in American history, architecture, archaeology and culture, established by the "Historic Preservation Act" of 1966 and maintained by the Secretary of the Interior.

National register potential ~ Status of a cultural resource which is deemed qualified for the National Register of Historic Places, prior to formal documenta-

tion and consultation; managed as if it were actually listed.

National wildlife refuge ~ An area administered by the U.S. Fish and Wildlife Service (USFWS) for the purpose of managing certain fish or wildlife species.

Naturalness ~ Refers to an area which "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable" (from section 2[c], "Wilderness Act").

Noncommercial forestland ~ Forestland which is not capable of producing 20 cubic feet per acre of wood per year of commercial tree species.

Noncommercial tree species ~ Species whose yields are not reflected in the allowable cut, regardless of their salability. Includes all hardwoods, juniper and mountain mahogany.

Nondiscretionary closures ~ Areas specifically closed to energy and/or mineral leasing, entry or disposal by law, regulation, Secretarial decision, or Executive order.

Nonoperable ~ Forestlands unsuitable for any type of timber harvest activity due to their (1) physical features; for example, extremely rocky, boulder fields, rim rocks, rock outcrops and unsafe for logging operations and/or (2) forestlands on which logging activity will result in the loss of the site's potential for producing commercial tree species; for example loss of soil through erosion, slope failure and/or the inability to reforest the site within acceptable time limits (usually 5 to 15 years) even with special reforestation techniques.

Nonproblem site ~ A subclass of commercial forestland which requires no special harvesting, reforestation or other restrictive measures in order to be managed on a sustained yield basis.

Nonrestricted forestland ~ Nonproblem sites in the timber base on which no special techniques are required for harvest, reforestation, and other management practices.

Nonuse ~ Available grazing capacity in AUM's which is not permitted during a given time period.

Noxious weed ~ According to the "Federal Noxious Weed Act" (Public Law 93-629), a weed that causes disease or has other adverse effects on man or his environment and, therefore, is detrimental to the agriculture and commerce of the United States and to the public health.

Off-road vehicle ~ Any motorized vehicle capable of, or designed for, travel on or immediately over land, water or other natural terrain, excluding (1) any nonamphibious registered motorboat, (2) emergency vehicles, and (3) vehicles in official use.

Old growth ~ Forested stands meeting, or with the capability to meet, the following criteria:

- Be at least 40 contiguous acres.
- Contain mature trees with at least 15 trees per acre greater than 20 inches in diameter.
- Having a multilayered canopy with two or more age classes.
- Contain snags and down woody material.
- Contain understory plants.

Open area designation ~ Any area where all types of vehicle use are permitted at all times, anywhere in the area subject to the operating regulations and vehicle standards set forth in 43 CFR 8341 and 8342.

Paleontology ~ A science dealing with the life forms of past geological periods as known from fossil remains.

Percentage of use ~ Grazing use of current vegetation growth, usually expressed as a percentage of volume removed.

Perennial (permanent) stream ~ A stream that ordinarily has running water on a year-round basis.

Period of use ~ The time of livestock grazing on a range area based on type of vegetation or stage of vegetative growth.

Perlite ~ A siliceous volcanic glass having numerous concentric spherical cracks that give rise to an onion-skin structure. The material can be heated and expanded to form a solid, foam-like material used in ceiling tiles, potting soil, and other applications.

Permit/leases (grazing) ~ Under section 3 of the "Taylor Grazing Act," a permit is a document authorizing use of public lands within grazing districts for the purpose of grazing livestock. Under section 15 of the "Taylor Grazing Act," a lease is a document authorizing livestock grazing use of public lands outside grazing districts.

Permit value ~ The market value of a BLM grazing permit which is often included in the overall market value of the ranch.

Petroglyph ~ A figure, design, or indentation carved, abraded, or pecked into a rock.

Pictograph ~ A figure or design painted onto a rock.

Playa lake ~ A shallow lake that is seasonally dry; soils on the lake bottom are usually quite alkaline.

Potential natural community ~ The biotic community (living organisms) that would become established if all successional sequences were completed without interferences by man under the present environmental conditions.

Preferred alternative or plan ~ The alternative in the Draft RMP/EIS which 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.

Prehistoric ~ Refers to the period wherein Native American cultural activities took place which were not yet influenced by contact with historic nonnative culture(s).

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

Presuppression ~ All actions involved in the location or allocation of suppression resources in order to be prepared to suppress wildland fires.

Proper use ~ The degree and time of use of the current year's plant growth which, if continued, will either maintain or improve the range condition consistent with conservation of other natural resources.

Proper use factor ~ The degree of use a kind of grazing animal will make of a particular plant when the range is properly grazed.

Public lands ~ Any land and interest in land (such as mineral estate) owned by the United States and administered by the Secretary of the Interior through the BLM. May include public domain or acquired lands in any combination.

Range betterment fund ~ A fund established by Congress in FLPMA comprised of 50 percent of the grazing fees collected by the U.S. Treasury. This fund is to be used for on-the-ground rehabilitation, protection, and improvement of the public lands that will arrest rangeland deterioration and improve forage conditions with resulting benefits to wildlife, watershed protection, and livestock production.

Range improvement ~ A structure, excavation, treatment or development to rehabilitate, protect, or improve public lands to advance range betterment; synonymous with range improvement.

Range seeding ~ The process of establishing vegetation by mechanical dissemination of seed.

Range trend ~ The direction of change in range condition and soil.

Raptor ~ Bird of prey with sharp talons and strongly curved beaks (such as hawks, owls, vultures, and eagles).

"Recreation and Public Purposes Act" ~ This act authorized the Secretary of the Interior to lease or convey public lands for recreational and public purposes under specified conditions of states or their political subdivisions, and to nonprofit corporations and associations.

Recreational opportunity ~ Those outdoor recreation activities which offer satisfaction in a particular physical, social, and management setting in the EIS areas; these activities are primarily hunting, fishing, wildlife viewing, photography, boating, and camping.

Recreational river areas ~ Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Research natural area (RNA) ~ An area where natural processes predominate and which is preserved for research and education; under current BLM policy, these areas must meet the relevance and importance criteria of ACEC's and are designated as ACEC's.

Residual ground cover ~ That portion of the total vegetative ground cover that remains after the livestock grazing season.

Resource area ~ The on-the-ground management unit of the BLM comprised of BLM-administered land within a specific geographic area.

Resource area profile ~ A component of the analysis of the management situation; a description of the current condition, amount, location, use and demands of the natural resources in a planning area.

Resource management plan (RMP) ~ Current generation of land use plans developed by BLM under the FLPMA; 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.

Retort ~ A vessel used for the distillation of volatile materials.

Rhyolite ~ A group of extrusive igneous rocks with the same composition as its intrusive equivalent, granite.

Right-of-way ~ A permit or an easement which authorizes the use of public lands for certain specified purposes, commonly for pipelines, roads, telephone lines, electric lines, reservoirs, etc.; also, the lands covered by such an easement or permit.

Right-of-way corridor ~ A parcel of land that has been identified by law, Secretarial order, through a land use plan or by other management decision as being the preferred location for existing and future right-of-way grants and suitable to accommodate one type of right-of-way or one or more rights-of-way which are similar, identical or compatible.

Riparian habitat ~ Riparian habitat is defined as a specialized form of wetland restricted to areas along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams; also, periodically, flooded lake and reservoir shore areas, as well as lakes with stable water levels with characteristic vegetation.

Rock art sites ~ Petroglyphs or pictographs

Rockshelter ~ Naturally-formed recess in a rock formation which provided shelter to prehistoric occupants.

Road ~ A vehicle route which has been improved and maintained by mechanical means to endure relatively regular and continuous use.

Roadless ~ For the purpose of the wilderness review program, this refers to the absence of roads which have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road. *Words and phrases used in the above definition of roadless are defined as follows:*

> **Improved and maintained** ~ Actions taken physically by man to keep the road open to vehicular traffic. "Improved" does not necessarily mean formal construction. "Maintained" does not necessarily mean annual maintenance.
>
> **Mechanical means** ~ Use of hand or power machinery or tools.
>
> **Relatively regular and continuous use** ~ Vehicular use which has occurred and will continue to occur on a relatively regular bases. Examples are access roads for equipment to maintain a stock water tank or other established water sources, access roads to maintained recreation sites or facilities, or access roads to mining claims.

Runoff ~ The water that flows on the land surface from an area in response to rainfall or snowmelt. As used in this RMP/EIS, runoff from an area becomes streamflow when it reaches a channel.

Salinity ~ A measure of the mineral substances dissolved in water.

Salable minerals ~ High volume, low value mineral resources including common varieties of rock, clay, decorative stone, sand, gravel, and cinder.

Satisfactory big game habitat condition ~ Big game habitat which does not have any habitat component deficiencies.

Scablands ~ These are areas with low sagebrush and other forb communities on extremely shallow, stoney soils usually subtended by basalt or clay.

Scenic byways ~ Highway routes which have roadsides or corridors of special aesthetic, cultural, or historic value. An essential part of the highway is its scenic corridor. The corridor may contain outstanding scenic vistas, unusual geologic 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.

Scenic quality ~ The degree of harmony, contrast and variety within a landscape.

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.

Seasonal (season long) grazing ~ Grazing use throughout a specific season.

Sediment ~ Soil, rock particles and organic or other debris carried from one place to another by wind, water or gravity.

Selective management categories ~ Three categories broadly defining rangeland characteristics, potential, opportunities, and needs. The three categories are maintain, improve and custodial. The criteria for each category are:

Maintain category criteria:

- Present range condition is satisfactory.
- Allotments have moderate or high resource production potential, and are producing near their potential (or trend is moving in that direction).
- No serious resource-use conflicts/controversy exist.
- Opportunities may exist for positive economic return from public investments.
- Present management appears satisfactory.
- Other criteria appropriate to EIS area.

Improve category criteria:

- Present range condition is unsatisfactory.
- Allotments have moderate to high resource production potential and are producing at low to moderate levels.
- Serious resource-use conflicts/controversy exist.
- Opportunities exist for positive economic return from public investments.
- Present management appears unsatisfactory.
- Other criteria appropriate to EIS area.

Custodial category criteria:

- Present range condition is not a factor.
- Allotments have low resource production potential, and are producing near their potential.
- Limited resource-use conflicts/controversy exist.
- Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors.
- Present management appears satisfactory or is the only logical practice under existing resource conditions.
- Other criteria appropriate to EIS area.

Seral community ~ A successional plant community that differs in species composition from the climax or potential natural community.

Seral stage ~ See "ecological status."

Shrub ~ A low, woody plant, usually with several stems, that may provide food and/or cover for animals.

Siliceous ~ Containing silica (silicon dioxide).

Silicic ~ Containing silica in dominant amount.

Silviculture ~ The science and art of producing and tending a forest.

Slash ~ The branches, bark, tops, cull logs and broken or uprooted trees left on the ground after logging has been completed.

Solitude ~ The state of being alone or remote from habitations; isolation; a lonely, unfrequented, or secluded place.

Special recreation management area ~ Areas which require explicit recreation management to achieve the Bureau's recreation objectives and provide specific recreation opportunities. Special management areas are identified in the RMP, which also defines the management objectives for the area. Major Bureau recreation investments are concentrated in these areas.

Special status species ~ Includes the following:

(1) Threatened and endangered (T&E) species are those officially listed as threatened or endangered by the Secretary of the Interior under the provisions of the "Endangered Species Act." A final rule for the listing has been published in the *Federal Register*.

(2) Proposed species are species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior. A proposed rule has been published in the *Federal Register*.

(3) Candidate species are those species designated as candidates (Categories 1 and 2) for listing as threatened or endangered by the USFWS/National Marine Fisheries Service (NMFS). A list has been

published in the *Federal Register*.

(4) State listed species are those proposed for listing or listed by a state in a category implying potential endangerment or extinction. Listing is either by legislation or regulation.

(5) Bureau sensitive species are those designated by a State Director, usually in cooperation with the state agency responsible for managing the species, as sensitive. They are those species that are either: (1) under status review by the FWS/NMFS; (2) whose numbers are declining so rapidly that Federal listing may become necessary; (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats.

(6) Assessment species are species which are not presently eligible for official Federal or state status but are of concern in Oregon and may need protection or mitigation in BLM actions (special status is defined in IM-OR-91-57, "Oregon-Washington Special Status Species Policy").

Species diversity ~ The number, different kinds of, and relative abundances of species present in a given area.

State listed species ~ Any plant or animal species listed by the State of Oregon as threatened or endangered within the State under Oregon Revised Statutes 496.004, 498.026, or 564.040.

Step-down ~ The process of applying broad-scale science findings and land use decisions to site-specific areas using a hierarchical approach (subbasin review) of understanding current resource conditions, risks, and opportunities.

Stocking rate ~ The amount of animal units on a specified area at a specific time, usually expressed in acres/AUM.

Streambank (and channel) erosion ~ This is the removal, transport, deposition, recutting and bedload movement of material by concentrated flows.

Subbasin 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.

Suitable for preservation as wilderness ~ Refers to a recommendation that certain Federal lands satisfy the definition of wilderness in the "Wilderness Act" and have been found appropriate for designation as wilderness on the basis of an analysis of the existing and potential uses of the land.

Sunstone ~ A semiprecious gemstone.

Suspended nonuse ~ Temporary withholding of a grazing preference from active use.

Sustainable annual harvest ~ The yield that a forest can produce continuously from a given level of management.

Sustained yield ~ Maintenance of an annual or regular periodic output of a renewable resource from public land consistent with the principles of multiple use.

Thermal cover ~ Vegetation or topography that prevents radiational heat loss, reduces wind chill during cold weather, and intercepts solar radiation during warm weather.

The Nature Conservancy (TNC) ~ Private national organization dedicated to the preservation of biological diversity.

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*.

Thriving natural ecological balance ~ The condition of the public range that exists when management objectives have been achieved that will: (1) sustain healthy populations of wild horses and burros, wildlife, and livestock on public land, and (2) protect the desired plant community from deterioration.

Timber base ~ Commercial forestland judged to be environmentally and economically suitable and available for the continuous production of timber; the land from which the allowable cut is calculated and harvested.

Timber production capability classification ~ The process of partitioning forestland into major classes indicating relative suitability to produce timber on a sustained yield basis.

Total dissolved solids ~ The dry weight of dissolved material, organic and inorganic, contained in water.

Total preference ~ The total number of animal unit

months of livestock grazing on public lands, apportioned and attached to base property owned or controlled by a permittee or lessee. The active preference and suspended preference are combined to make up the total grazing preference.

Tradition ~ Longstanding, socially conveyed, customary patterns of thought, cultural expression, and behavior, such as religious beliefs and practices, social customs and land or resource uses (e.g. root gathering). Traditions are shared generally within a social and/or cultural group and span generations.

Turbidity ~ An interference to the passage of light through water due to insoluble particles of soil, organics, microorganisms and other materials.

Unallotted lands ~ Public lands open to grazing which currently have no livestock grazing authorized.

U.S. Department of Interior (USDI) ~ Government department which oversees the BLM and many other agencies.

User day ~ Any calendar day, or portion thereof, for each individual accompanied or serviced by an operator or permittee on the public lands or related waters; synonymous with passenger day or participant day.

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

Unsatisfactory big game habitat condition ~ Big game habitat which has a deficiency in one or more of the major habitat components.

Utilization ~ The proportion of the current year's forage production that is consumed or destroyed by grazing animals. This may refer either to a single species or to a whole vegetative complex. Utilization is expressed as a percent by weight, height, or numbers within reach of the grazing animals.

Value-at-risk classes ~ Six value classes (1–6, low to high) derived through interdisciplinary team evaluation of resource values for an area. Point values given an area by individual disciplines are combined to determine general values-at-risk classification for an area.

Vandalism ~ Willful or malicious destruction or defacement of public or private property. As used here, this includes damages done for personal gain, particularly unauthorized destructive activities that damage archaeological sites.

Vegetation manipulation ~ Alteration of present vegetation by using fire, plowing, or other means to manipulate natural successional fields.

Visitor-day ~ Twelve visitor-hours, which may be aggregated continuously, intermittently, or simultaneously by one or more persons. Visitor-days may occur either as recreation visitor-days or as nonrecreation visitor-days.

Visual resource(s) ~ The land, water, vegetation, animals, and other features that are visible on all public lands.

Visual resource management classes (VRM) ~ The degree of alteration that is acceptable within the characteristic landscape. It is based upon the physical and sociological characteristics of any given homogenous area.

> **VRM Class I** (preservation) provides for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers and other similar sites where landscape modification activities should be restricted.
>
> **VRM Class II** (retention of the landscape character) includes areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.
>
> **VRM Class III** (partial retention of the landscape character) includes areas where changes in the basic elements (form, line, color, or texture) may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
>
> **VRM Class IV** (modification of the landscape character) includes areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

Water quality ~ The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

Watershed ~ All lands which are enclosed by a continuous hydrologic drainage divide and lie upslope from a specified point on a stream.

Watershed cover ~ The material (vegetation, litter,

and rock) covering the soil and providing protection from, or resistance to, the impact of raindrops and the energy of overland flow, and expressed in percent of the area covered.

Way ~ A vehicle route which has not been improved and maintained by mechanical means to ensure relatively regular and continuous use. These vehicle routes are associated with WSA's.

Wetlands ~ Permanently wet or intermittently flooded areas where the water table (fresh, saline, or brackish) is at, near, or above that soil surface for extended intervals; where hydric wet soil conditions are normally exhibited and where water depths generally do not exceed 2 meters.

Wilderness ~ An area that is essentially natural in character that has been designated by congressional action in order to preserve that naturalness.

Wilderness characteristics ~ Key characteristics of a wilderness listed in section 2(c) of the "Wilderness Act" of 1964 and used by BLM in its wilderness inventory. These characteristics include size, naturalness, outstanding opportunities for solitude, outstanding opportunities for primitive or unconfined recreation, and special features.

Wilderness study area (WSA) ~ Public land under the jurisdiction of the BLM 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.

Wildfire ~ Any unwanted wildland fire.

Wildland fire ~ Any nonstructure fire, other than prescribed fire, that occurs in the wildland.

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 areas ~ Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Withdrawal ~ Withholding of an area of Federal land from settlement, sale, location, or entry under some or all of the general land laws, for the purpose of limiting those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area of Federal land from one department, bureau, or agency to another.

Woodland ~ A forest community occupied primarily by noncommercial species such as juniper, mountain mahogany, or quaking aspen groves; all western juniper forest lands are classified as woodlands, since juniper is classified as a noncommercial species.

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