U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

Salem District

Record of Decision
and
Resource Management Plan

Prepared by
Salem District Office
Salem, Oregon

May 1995

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Salem District Office
1717 Fabry Road SE
Salem, Oregon 97306

In Reply Refer to:
1617 (933)

May 1995

Dear Reader:

This is a consolidated document which includes the Salem District Resource Management Plan and its record of decision. The plan was approved by the Oregon/Washington State Director, on May 12, 1995. The record of decision approves the Bureau of Land Management's decisions for managing 398,100 acres in portions of 12 northwest Oregon counties.

The record of decision was prepared in conformance with section 40, Code of Federal Regulations, part 1505.2, which requires a concise document linking the manager's decision to the analysis presented in the Salem District final environmental impact statement, dated September 1994. The record of decision shows how environmental impacts and other factors were considered in the decision-making process. The record of decision documents approval and adoption of the preferred alternative, as described in the Salem District Proposed Resource Management Plan/Final Environmental Impact Statement. Minor differences from the final environmental impact statement, volume I, chapter 2 - Proposed Action, or points of clarification in land use allocations or management direction have been incorporated in response to public comment on the final environmental impact statement and ongoing staff review.

The director of the Bureau of Land Management determined that there were eight valid protests on the Salem District Proposed Resource Management Plan/Final Environmental Impact Statement. After careful consideration of all points raised in those protests, the director concluded that the planning team and decision-makers followed the applicable planning procedures, laws, regulations, policies and resource considerations in developing the proposed resource management plan. In addition, the governor of Oregon was provided a formal opportunity to review the proposed plan for conformance with officially approved or adopted natural resource-related plans, programs or policies of the state or local governments. There were no objections from the governor.

This document has been sent to all those individuals and groups who were on the mailing list for the Salem District Proposed Resource Management Plan/Final Environmental Impact Statement. The full supporting record for the approved resource management plan is available for inspection in the Salem District Office, at the address shown above. Copies of draft and final environmental impact statements are also available for inspection in the public room at the BLM Oregon/Washington State Office, 1515 SW Fifth Street, Portland, Oregon, and at local libraries. Due to the cost of publication and the expected long-term use of these documents, we urge you to retain your personal copies of each of these documents for future reference.

Although this document contains a map packet with critical information on major land use allocations and management prescriptions, some of the maps will require periodic updating as we implement the approved plans, collect and analyze more information, and practice adaptive management. In addition, district maps will be developed to provide more detailed information for off-highway-vehicle management designations and mineral and energy development restrictions and made available to the public.

We are pleased to provide this copy for your reference and we extend our appreciation for your interest, cooperation, and assistance during this planning process. We encourage you to stay informed and involved as we implement, monitor, and evaluate the plan.

Sincerely,

_____

Van Manning, Salem District Manager

Salem District

Record of Decision

Record of Decision for the Salem District Resource Management Plan

Prepared by the Bureau of Land Management, Salem District, Salem, Oregon

Introduction

In this record of decision we adopt and approve for immediate implementation the Salem District Resource Management Plan. The resource management plan addresses resource management on 398,100 acres of federal land and 27,800 acres of reserved mineral estate administered by the Bureau of Land Management (BLM). The lands and mineral estate are scattered in twelve counties of northwest Oregon. The resource management plan is based on a combination of this office's August 1992 draft environmental impact statement and the September 1994 final environmental impact statement. It is also supported by and consistent with the July 1993 Draft and the February 1994 Final *Supplemental Environmental Impact Statement (SEIS) on Management of Habitat of Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* and its associated April 1994 interagency *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl*. The resource management plan was slightly modified in response to public comments and protests.

The resource management plan responds to the need for a healthy forest ecosystem with habitat that will contribute toward and support populations of native species, particularly those associated with late-successional and old-growth forests. It also responds to the need for a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies, and contribute valuable resources to the national economy on a predictable and long-term basis. As guided by the April 1994 interagency record of decision, BLM-administered lands are primarily allocated to Riparian Reserves, Late-Successional Reserves, and Adaptive Management Area, Connectivity/Diversity Blocks, and General Forest Management Areas. An Aquatic Conservation Strategy will be applied to all lands and waters under BLM administration. Major land and resource allocations of the approved resource management plan are displayed in table 1, which may be found at the end of this record of decision.

Alternatives Considered for Decision

Seven alternatives for management of the BLM-administered lands and resources in the district were analyzed in the final environmental impact statement, and nine other alternatives in the final SEIS. A brief description of each alternative analyzed in the final environmental impact statement follows:

No Action. This alternative would not change the BLM management direction established in the current Westside Salem and Eastside Salem Management Framework Plans and associated timber management environmental impact statements.

Alternative A. This alternative would emphasize a high production of timber and other economically important values on all lands to contribute to community stability.

Alternative B. This alternative would emphasize the contribution of timber production on Oregon and California Revested Railroad lands to community stability, consistent with a variety of other land uses. Public domain lands with nontimber values and uses of greater importance than timber production would be managed primarily for those values and uses.

Alternative C. This alternative would emphasize retention and improvement of biological diversity while providing a sustained yield of timber to contribute to economic stability.

Alternative D. This alternative would emphasize management for plant and animal habitat diversity, dispersed nonmotorized recreation opportunities, and scenic resources. It would include a variety of other resource values or uses including some timber production.

Alternative E. This alternative would emphasize protection of older forests and management and enhancement of values or uses such as dispersed, nonmotorized recreation activities and scenic resources.

The Proposed Resource Management Plan. This alternative would emphasize ecosystem management. It would also respond to public comments, incorporate land use allocations and management direction from the interagency record of decision noted above and allow the BLM to manage the natural resources under its jurisdiction to maintain healthy, diverse, and productive ecosystems and to produce commodities.

Rationale for Decision

The congressionally-directed purposes for managing BLM-administered lands include conserving ecosystems upon which species depend and, at the same time, providing raw materials and other resources that are needed to sustain the health and economic well-being of the people of this country. To balance these sometimes conflicting purposes, the Salem District adopts the alternative that will both maintain the late-successional and old-growth forest ecosystem and provide a predictable and sustainable supply of timber, recreational opportunities, and other resources at the highest level possible. The proposed resource management plan alternative best meets these criteria.

The proposed resource management plan alternative, unlike all of the other alternatives, applies the same criteria for management of habitat on Forest Service and BLM-administered lands. This was done in order to accomplish most efficiently the dual objectives discussed above–that is, achieving the biological results required by law, while minimizing adverse impact on timber harvests and jobs. The inefficiencies involved in applying different criteria on Forest Service and BLM-administered land have been noted in previous analyses. For example, in the Report of the Scientific Analysis Team, the team found that BLM plans were relatively high-risk, when compared to the plans of the Forest Service, in terms of conserving the northern spotted owl. As a result, the Scientific Analysis Team found that in order for the Forest Service to "make up for significantly increased risks," it would have to dramatically increase the size of protected areas on Forest Service land (Scientific Analysis Team Report, pages 12-13).

The Salem District Manager and area managers have reviewed the alternatives discussed in the proposed resource management plan/final environmental impact statement, their predicted environmental, economic and social consequences, and the risks and safeguards inherent in them. The proposed resource management plan alternative in the proposed resource management plan/final environmental impact statement is the best alternative for providing a sustainable level of human use of the forest resource while still meeting the need to maintain and restore the late-successional and old-growth forest ecosystem. The proposed resource management plan alternative is therefore selected as the management direction that best responds to the purpose and need for the proposed action as expressed in the proposed resource management plan/final environmental impact statement.

This conclusion is based on a number of factors. Although management under alternatives A, B, or no action would provide higher levels of timber supply than the proposed resource management plan alternative, those alternatives would not provide adequate assurance that the processes and functions of late-successional and old-growth forest ecosystems would be maintained and restored, and would not provide adequate assurance that the riparian habitat essential for many aquatic and terrestrial species would be maintained and restored. Alternatives A, B, and no action would have negative long-term impacts on the northern spotted owl. The proposed resource management plan alternative would have a beneficial impact on more special status animal species than any other alternative (see the proposed resource management plan/final environmental impact statement, table 4-15, page 4-55). The proposed resource management plan alternative provides the greatest protection of aquatic habitat since it provides for wider riparian reserves and more protective measures for perennial and intermittent streams than other alternatives (see the proposed resource management plan/final environmental impact statement, page 4-28).

As to the no action alternative, it is based on plans that existed prior to the listing of both the northern spotted owl and the marbled murrelet, and it makes no specific provision for the recovery of those species. In addition, it reflects a relatively low level of riparian habitat protection. In view of these factors, alternatives A, B, and no action are deemed unlikely to satisfy the requirements of the Endangered Species Act.

Compared to the proposed resource management plan, all other alternatives would provide considerably less protection for riparian-dependent species and consequently less connectivity between reserves that aid in the dispersal of terrestrial species. Of particular importance under the proposed resource management plan is protection of riparian zones along first and second order streams. Riparian zones provide connectivity between blocks of suitable habitat when the uplands have been harvested.

The impacts to many species, and groups of species, of fish, wildlife, and plants are complex and difficult to summarize in this record of decision. They are described in detail in the proposed resource management plan/final environmental impact statement. Based upon the proposed resource management plan/final environmental impact statement and all of the information in the record, the district has determined that the proposed resource management plan alternative will continue to meet the needs of species influenced by federal land management activities. The proposed resource management plan alternative meets the requirements of the Endangered Species Act for the conservation of listed species. It also meets the requirements of laws directing the management of these forests for sustainable multiple uses, including the Federal Land Policy and Management Act, and the Oregon and California Lands Act. Moreover, it meets the requirements of acts that protect elements of the environment, and requirements for coordinated planning and consultation.

In addition, the proposed resource management plan alternative offers one advantage that the other alternatives do not–its inclusion of an adaptive management area. Adaptive management involves experimentation, identifying new information, evaluating it, accounting for it in discretionary decisions, and determining whether to adjust plan direction. The object is to improve the implementation and achieve the goals of the selected alternative. The proposed resource management plan alternative is the only one that specifically allocates an adaptive management area, which may be used to develop and test new management approaches to achieve the desired ecological, economic, and other social objectives. The adaptive management area offers an opportunity for creative, voluntary participation in forest management activities by willing participants. This will take time, effort, and a good-faith commitment to the goal of improved forest management. Many of the potentially participating communities and agencies have different capabilities for joining this effort. The BLM approach to implementing this initiative will recognize and reflect these differences by seeking to encourage and support the broadest possible participation.

Moreover, the proposed resource management plan alternative allows silvicultural activities, such as thinning young forest stands in late-successional reserves when those activities will enhance late-successional conditions. Compared to the other alternatives, the proposed resource management plan alternative will in the future provide the best network of old-growth forests.

The Environmentally Preferable Alternative

Environmental preferability is judged using the criteria suggested in the National Environmental Policy Act of 1969, which is guided by the Council on Environmental Quality (CEQ). The CEQ has stated that "The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in the National Environmental Policy Act, section 101. Generally, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources." (Council on Environmental Quality, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (40 Code of Federal Regulations 1500-1598), Federal Register, vol. 46, no. 55, 18026-18038, March 23, 1981: question 6a.)

Section 101 of the National Environmental Policy Act (NEPA) establishes the following goals:

- **Fulfill the responsibility of this generation as trustee of the environment for succeeding generations (NEPA §101(b)(1));**
- **Assure for all Americans productive and aesthetically and culturally pleasing surroundings (NEPA §101(b)(2));**
- **Attain the widest range of beneficial uses of the environment without degradation or other undesirable and unintended consequences (NEPA §101(b)(3));**
- **Preserve important natural aspects of our national heritage and maintains an environment which supports diversity and variety of individual choice (NEPA §101(b)(4));**
- **Achieve a balance between population and resource use, which permits high standards of living and a wide sharing of life's amenities (NEPA §101(b)(5)); and**
- **Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources (NEPA §101(b)(6)).**

The proposed resource management plan would allow for the smallest amount of directly human-induced effects on the physical environment. It would provide approximately 220,000 acres managed for retention and development of older forest (Late-Successional Reserves) and approximately 24,000 acres managed for maintenance of older forest characteristics (Connectivity/Diversity Blocks). Approximately 220,000 acres would be managed as Riparian Reserves. The proposed resource management plan alternative would have more positive estimated effects on wildlife habitat than any other alternative (see the proposed resource management plan/final environmental impact statement, table 4-3, page 4-20). In the long term, conditions of riparian zones on BLM-administered lands are expected to improve under the proposed resource management plan more than any other alternative (see the proposed resource management plan/final environmental impact statement, page 4-28). Based on the probable sale quantity estimates, Bureau of Land Management forests in the planning area would produce about 5.7 million cubic feet (or 34.8 million board feet) of timber annually under the proposed resource management plan (see the proposed resource management plan/final environmental impact statement, table S-1, page S-20). Based on these factors, the proposed resource management plan is considered the "environmentally preferable alternative."

Implementation

Decisions in this plan will be implemented over a period of years. The rate of implementation is tied to the BLM's budgeting process. General priorities for overall management will be developed through long-term budgeting processes and in consultation with other agencies, tribes and government units. Specific priorities for geographic subunits or for individual programs or projects will be established, in large part, after local watershed analysis, Late-Successional Reserve assessments, an Adaptive Management Area plan, and further environmental analysis are completed, as appropriate. Those priorities will be reviewed annually to help develop work plan commitments for the coming years. The procedures to implement, called management actions/direction, are shown in the approved plan by major land use allocation and by resource program. Although the resource management plan implementing actions are described by individual resources, most activities will be consolidated and considered in interdisciplinary, multi-resource activity plans and based on watershed analyses.

Valid Existing Rights

This plan will not repeal valid existing rights on public lands. Valid existing rights are those rights or claims to rights that take precedence over the actions contained in this plan. Valid existing rights may be held by other federal, state, or local government agencies or by private individuals or companies. Valid existing rights may pertain to mining claims, mineral or energy leases, rights-of-way, reciprocal rights-of-way, leases, permits, and water rights.

Administrative Actions

Various types of administrative actions will require special attention beyond the scope of this plan. Administrative actions are the day-to-day transactions required to serve the public and to provide optimum use of the resources. These actions are in conformance with the plan. They include, but are not limited to; permits or sales for traditional or special forest products; competitive and commercial recreation activities; lands and realty actions, including issuance of grants, leases, and permits and resolution of trespass; facility maintenance; law enforcement and hazardous material removal or mitigation; enforcement and monitoring of permit stipulations; cadastral surveys to determine legal land or mineral estate ownership; and engineering support to assist in mapping, designing, and implementing projects. These and other administrative actions will be conducted at the resource area, district or state level, sometimes in partnership with other landowners or agencies or entities. The degree to which these actions are carried out will depend upon BLM policies, available personnel, funding levels, and further environmental analysis and decision making, as appropriate.

Mitigation and Monitoring

All protective measures and other management direction identified in the plan will be taken to avoid or mitigate adverse impacts. These measures will be taken throughout implementation. All practical means to avoid or reduce environmental harm will be adopted, monitored and evaluated, as appropriate.

Monitoring will be conducted, as identified in the approved plan. Monitoring and evaluations will be utilized to ensure that decisions and priorities conveyed by the plan are being implemented, that progress toward identified resource objectives is occurring, that mitigating measures and other management direction are effective in avoiding or reducing adverse environmental impacts, and that the plan is maintained and consistent with the ongoing development of BLM state office, regional, and national guidance.

Public Involvement

A notice, announcing the formal start of the district resource management plan process, was published in the Federal Register August 28, 1986, in the local news media, and through a mass mailer to all known interested parties. A series of planning brochures and documents were distributed over the entire planning period to provide public input and feedback opportunities in the development of planning issues, goals, objectives, and data needs for the planning effort.

In January 1991, 800 copies of the district summary of the analysis of the management situation and preliminary alternatives were mailed to interested agencies, organizations and individuals. This document described a variety of alternatives, most of which had similar objectives to comparable alternatives in the other ongoing five BLM western Oregon resource management plan/environmental impact statements.

In August 1992, a Notice of Availability of the draft resource management plan/environmental impact statement was published in the Federal Register by the BLM, in addition to a notice by the Environmental Protection Agency. Newspaper and other media were also notified of the document availability, the length of the comment period and the dates, times, and locations of public meetings. The draft resource management plan/environmental impact statement was sent to a list of 700 individuals, organizations and agencies.
A total of 135 people attended 16 meetings. A total of 783 letters, form letters, petitions, etc., were received by the end of the extended comment period.

A summary of public involvement associated with the July 1993 Draft and February 1994 *Final SEIS on Management of Habitat of Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl* is included on pages 58-73 of the April 1994 interagency *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl* and is hereby incorporated by reference.

On November 23, 1994, a Notice of Availability of the proposed resource management plan/final environmental impact statement was published in the Federal Register by the BLM. In addition, a November 25, 1994 notice by the Environmental Protection Agency initiated the official protest and public comment period. Newspaper and other media were also notified of the document availability, the length of the protest period and the date, time, and location of a public meeting. The proposed resource management plan/final environmental impact statement or summary were sent to a list of 800 individuals, organizations, and agencies. A total of 27 people attended the meetings. Eleven letters were received by the district manager. There were no objections or recommendations by the governor on behalf of any state or local government entity. There are no known inconsistencies with officially approved or adopted natural resource related plans, policies, or programs of applicable state or local governments or Indian tribes.

The official period to protest the proposed plan closed on December 27, 1994. Eight valid protests were received, reviewed, and resolved by the director. As a result of the protests and 11 comment letters, a number of nonsubstantive changes have been made in the text of the approved plan to reflect typographical corrections, improve clarity or demonstrate consistency with various regulatory procedures or policies.

District Manager Recommendation

I recommend the adoption of the Salem District Resource Management Plan.

_____

Van Manning **Date**

District Manager, Salem District, Salem, Oregon

State Director Approval

I approve the Salem District Resource Management Plan as recommended and hereby declare that, effective October 1, 1994, the annual productive capacity (allowable harvest level) of the Columbia, Alsea-Rickreall, Clackamas-Molalla, and Santiam River master units is 5.72 million cubic feet.

This document meets the requirements for a Record of Decision as provided in 40 Code of Federal Regulations 1505.2.

_____

Elaine Zielinski **Date**

State Director, Oregon/Washington
Bureau of Land Management

Salem District

Resource Management Plan

Table of Contents

Resource Management Plan

The Planning Area 1
Purpose and Need 1
Relationship of the Resource Management Plan
to BLM Policies, Programs, and Other Plans 2
Planning Process 3
The Resource Management Plan 4
Ecological Principles for Management of Late-Successional Forests 5
Aquatic Conservation Strategy 5
Land Use Allocations and Resource Programs 7
Major Land Use Allocations 8
Riparian Reserves 9
Late-Successional Reserves 15
Adaptive Management Area 19
Matrix 20
Resource Programs 22
Air Quality 22
Water and Soils 22
Wildlife Habitat 24
Fish Habitat 27
Special Status and SEIS Special Attention Species and Habitat 28
Special Areas 33
Cultural Resources 36
Visual Resources 36
Wild and Scenic Rivers 37
Wilderness 38
Rural Interface Areas 39
Socioeconomic Conditions 41
Recreation 41
Timber Resources 46
Special Forest Products 49
Energy and Minerals 50
Land Tenure Adjustment 53
Rights-of-Way 55
Access 57
Withdrawals 57
Roads 62

Resource Programs, continued
Noxious Weeds 64
Hazardous Materials 64
Fire/Fuels Management 65
Coordination and Consultation 67
Use of the Completed Plan 68
Adaptive Management 69
Watershed Analysis 71
Requirement for Further Environmental Analysis 73
Management of Newly Acquired Lands 74
The Budget Link 74
Monitoring 75
Research 76

Tables

Table 1 BLM-Administered Land in the Planning Area 1
Table 2 Management of Special Areas 34
Table 3 Managed Rural Interface Areas 40
Table 4 Leasable Mineral Lease Restrictions 52
Table 5 Locatable Mineral Restrictions 52
Table 6 Salable Mineral Restrictions 53
Table 7 Land Withdrawals and Recommendations to Maintain or Revoke 58
Table 8 Land Classifications 61

Figures

Figure 1 Process for Changing the Resource Management Plan 70
Figure 2 Basic Adaptive Management Model 71

Index

Appendices

A-1 Summary of Land Allocations and Management Actions/Direction A-1–1

A-2 Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl A-2–1

B-1 Management for SEIS Special Attention Species B-1–1

B-2 BLM Special Status Species B-2–1

C Best Management Practices C-1
Timber Production Capability Classification Fragile Code Guidance C-11

D Silvicultural Systems and Harvest Methods D-1

E The Forest Genetics Program E-1

F Restrictions on Mineral and Energy Exploration and Development Activity F-1

G Land Tenure Adjustment, Zone 3 Lands G-1

H Land Tenure Adjustment Criteria H-1

I Proposed Withdrawals (Highway 101) I-1

J Monitoring J-1

Maps (Located in accompanying map packet)

Map 1 General Location

Map 2 Land Status

Map 3 District Planning Strategy

Map 4 District Planning Strategy (Reserves)

Map 5 Special Areas

Map 6 Visual Resource Management Classes

Map 7 Existing and Suitable Wild and Scenic, and/or Recreational Rivers; Existing and Potential Wilderness, Wilderness Study Areas, and Instant Study Areas

Map 8 Managed Rural Interface Areas

Map 9 Existing and Proposed Recreation Sites, Areas, and Trails, and National Back Country Byways

Map 10 Land Tenure Zones

Map 11 General Communication Sites and Utility Rights-of-Way

The Planning Area

The Salem District Resource Management Plan (hereinafter referred to as the resource management plan) describes management of approximately 398,100 acres of land in western Oregon administered by the U.S. Department of the Interior, Bureau of Land Management (BLM). There are also 27,800 acres of nonfederal land with federal subsurface mineral estate administered by the BLM.

BLM-administered lands in the planning area are primarily located in the western foothills of the Cascade Range and in the Oregon Coast Range (see maps 1 and 2). They are predominantly forested with stands of Douglas-fir, and drain into the Willamette River and a number of different coastal rivers. Population is centered in and near Portland and Salem.

The amount of BLM-administered land in the planning area by county is shown in table 1.

Table 1 BLM-Administered Land in the Planning Area (acres)

County	O&C[1]	Public Domain[2]	Total
Benton	51,500	6,100	57,700
Clackamas	49,100	21,600	70,700
Clatsop	0	0	0
Columbia	11,000	0	11,000
Lane	8,600	400	9,000
Lincoln	8,400	11,800	20,200
Linn	68,300	2,200	70,500
Marion	20,800	200	21,000
Multnomah	4,200	0	4,200
Polk	40,500	200	40,700
Tillamook	37,400	10,800	48,200
Washington	11,600	300	11,900
Yamhill	33,000	0	33,000
Total	344,500	53,600	398,100

[1] Public lands granted to the Oregon and California Railroad Company and subsequently revested to the United States.

[2] Original federal lands which were not transferred to other jurisdictions and which continue to be managed by the United States.

[3] Clatsop County and Yamhill County Public Domain lands less than 50 acres, so rounded to zero.

Source: Micro*Storms data base.

Purpose and Need

The resource management plan responds to needs for forest habitat and forest products as discussed in the *Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl*, hereinafter referred to as the SEIS.

The need for forest habitat is the need for a healthy forest ecosystem with habitat that will support populations of native species and includes protection for riparian areas and waters. This need was reflected by President Clinton at the April 2, 1993, Forest Conference in Portland, Oregon.

The need for forest products from forest ecosystems is the need for a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies and contribute valuable resources to the national economy, on a predictable and long-term basis. This need also was reflected by President Clinton at the Forest Conference.

The resource management plan was developed after consideration of the following:

- public comments at open house meetings and in correspondence;
- comments from other government agencies;
- BLM staff analysis of the consequences of alternatives;
- legal mandates of federal laws and executive orders;
- decisions made in the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* and its Attachment A, hereinafter referred to as the SEIS record of decision; and
- requirements of bureau policy.

The resource management plan was developed under the requirements of the Federal Land Policy and Management Act through the use of an interdisciplinary planning process. This resource management plan is written in compliance with the National Environmental Policy Act and related Council on Environmental Quality regulations.

The management of the Oregon and California revested railroad lands (hereinafter referred to as Oregon and California lands) is governed by a variety of statutes, including the Oregon and California Lands Act, the Federal Land Policy and Management Act, the Endangered Species Act, and the Clean Water Act. The Oregon and California Lands Act requires the Secretary of the Interior to manage Oregon and California lands for permanent forest production; however, such management must also be in accord with sustained-yield principles. Further, that Act requires that management of Oregon and California lands protect watersheds, regulate streamflow, provide for recreational facilities, and contribute to the economic stability of local communities and industries. The Act does not require the Secretary to harvest all old-growth timber or all commercial timber as rapidly as possible or according to any particular schedule. The Secretary has discretion to determine how to manage the forest on a sustained-yield basis that provides for permanency of timber production over a long-term period. The Secretary must necessarily make judgments, informed by as much information as possible, about what kind of management will lead to permanent forest production that satisfies the principle of sustained yield.

Oregon and California lands must also be managed in accordance with other environmental laws such as the Endangered Species Act and the Clean Water Act. Some provisions of these laws take precedence over the Oregon and California Lands Act. For instance, the Endangered Species Act requires the Secretary to ensure that management of Oregon and California lands will not likely result in jeopardy to listed species or destruction or adverse modification of critical habitat. The Endangered Species Act directs the Secretary and all federal agencies to utilize their authorities to carry out programs for the conservation and recovery of listed species. Section 5(a) of the Act also directs: "the Secretary, and the Secretary of Agriculture with respect to the National Forest System, shall establish and implement a program to conserve fish, wildlife, and plants, including those which are listed as endangered species or threatened species pursuant to Section 4 of this Act." 16 U.S.C. § 1534(a). Although several northern spotted owl recovery plans have been proposed, the Secretary has not yet adopted final recovery plans for either the northern spotted owl or the marbled murrelet. The SEIS record of decision's Late-Successional Reserve and Riparian Reserve concepts are important building blocks in the development of recovery plans to achieve the conservation and recovery of those species.

One of the purposes of the Endangered Species Act is the preservation of ecosystems upon which endangered and threatened species depend. A forward-looking land management policy would require that federal lands be managed in a way to minimize the need to list species under the Endangered Species Act. Additional species listings could have the effect of further limiting the Oregon and California Lands Act's goal of achieving and maintaining permanent forest production. This would contribute to the economic instability of local communities and industries, in contravention of a primary objective of Congress in enacting the Oregon and California Lands Act. That Act does not limit the Secretary's ability to take steps now that would avoid future listings and additional disruptions.

Protection of watersheds and regulation of streamflow are explicit purposes of forest production under the Oregon and California Lands Act. Riparian Reserves, including those established on Oregon and California lands under the resource management plan, are designed to restore and maintain aquatic ecosystem functions. Together with other components of the Aquatic Conservation Strategy, Riparian Reserves will provide substantial watershed protection benefits. Riparian Reserves will also help attain and maintain water quality standards, a fundamental aspect of watershed protection. Riparian Reserves and Late-Successional Reserves will help regulate streamflows, thus moderating peak streamflows and attendant adverse impacts to watersheds.

Relationship of the Resource Management Plan to BLM Policies, Programs, and Other Plans

The BLM in western Oregon developed five other resource management plans. The six resource management plans cover all BLM-administered lands in western Oregon. Some lands administered by the Eugene District directly adjoin lands addressed in this plan. There is shared management

of certain resource or administrative features (e.g., watersheds and road networks). The Salem and Eugene districts cooperate in the management of these adjoining lands.

The Salem District Draft Resource Management Plan/Environmental Impact Statement (hereinafter referred to as the draft resource management plan) was supplemented by the SEIS. The SEIS record of decision, signed jointly by the Secretary of the Interior and the Secretary of Agriculture, required BLM to incorporate the land-use allocations and standards and guidelines in that decision in the BLM's resource management plans for western Oregon. The resource management plan is intended to be consistent with the SEIS record of decision; any apparent inconsistencies are oversights or misinterpretations of SEIS record of decision language. The final SEIS describes the environmental impacts which would arise from those directions. This resource management plan incorporates the analysis in that final SEIS.

The following management plans have been developed to respond to specific congressional mandates: Table Rock Wilderness, Yaquina Head Outstanding Natural Area, Salmon Wild and Scenic River, Sandy Wild and Scenic River, Quartzville Creek Wild and Scenic River, and the Clackamas Wild and Scenic River. The plan for the Clackamas Wild and Scenic River was prepared by the Forest Service with BLM as a cooperating agency. The basic management guidance for developing or implementing these plans is not changed by this resource management plan.

The resource management plan incorporates the following records of decision by reference:

- *Northwest Area Noxious Weed Control Program*
- *Western Oregon Program — Management of Competing Vegetation*
- *Pacific Yew management program*

Any finding made in the record of decision for this resource management plan that certain river segments studied herein are suitable for designation under the Wild and Scenic Rivers act, is a preliminary administrative finding. The finding will receive further review and possible modification by the Director, BLM; Secretary of the Interior; or the President of the United States. To facilitate the review, after completion of this resource management plan and its record of decision, the BLM may elect or be required to prepare a study report to support recommendations to Congress for designation of specific rivers or river segments. Final decisions have been reserved by Congress unless the Governor nominates a river to the Secretary of the Interior, who may then decide to designate it.

There is one wilderness instant study area in the planning area, the 80-acre Little Sink Research Natural Area. A study of this area was completed and sent to Congress as part of a national package of instant study areas in 1985. Congress has taken no action on these instant study areas. Pending congressional action, the wilderness values of Little Sink will be protected.

Planning Process

The BLM's planning process involves the following nine steps:

1. Identify issues, concerns, and opportunities.
2. Develop planning criteria.
3. Collect inventory data and information.
4. Analyze the management situation.
5. Formulate alternatives.
6. Estimate effects of alternatives.
7. Select the preferred alternative (and publish the draft resource management plan/environmental impact statement).
8. Select the resource management plan. Publish the proposed resource management plan/final environmental impact statement. Respond to any protest for the proposed resource management plan/final environmental impact statement.
9. Implement, monitor, and evaluate the resource management plan.

Publication of this document constitutes completion of step 8. Public involvement has occurred at several steps in the process.

The planning process is designed to help the BLM identify the uses of BLM-administered lands desired by the public. It also assists the BLM in considering these uses to the extent consistent with the laws established by Congress and the policies of the executive branch of the federal government regarding management of these lands.

Where the BLM manages only the subsurface mineral estate, the resource management plan addresses only the management of BLM-administered minerals.

The Resource Management Plan

The purpose of this section is to describe the Salem District resource management plan. This section includes descriptions of:

- **concepts underlying the plan (vision, strategy and major principles);**
- **land use allocations and resource programs in the plan; and**
- **miscellaneous guidance such as coordination and consultation, use of the completed plan, and monitoring.**

The resource management plan was developed partially in response to public comments related to BLM's August 1992 draft resource management plans for western Oregon. In addition the plan incorporates the land use allocations and management direction from the SEIS record of decision. Finally, the plan was slightly modified in response to public comments and protests on the September 1994 proposed resource management plans for western Oregon.

The resource management plan incorporates the following nonsubstantive changes from the proposed resource management plan:

- **Language revisions intended to clarify some management direction;**
- **Language revisions intended to tighten the link between the resource management plan and the 1994 *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* and *Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*;**
- **Revisions that incorporate guidelines issued by the Regional Ecosystem Office since the issuance of the 1994 record of decision named above. Such guidelines may clarify or interpret the 1994 record of decision;**
- **Deletion of some material, such as Issues and Concerns, considered unnecessary for this document;**
- **Modification of some tables, maps, figures, appendices, and text to make this a stand-alone document; and**
- **Addition of the Little Sandy River Watershed as a Tier 2 Key Watershed (inadvertently omitted in the proposed resource management plan.**

Vision

The BLM will manage land and natural resources under its jurisdiction in western Oregon to maintain healthy, diverse, and productive ecosystems so that present and future generations may continue to benefit from the public lands.

There are several basic principles supporting this vision:

- **natural resources can be managed to provide for human use and a healthy environment;**
- **resource management must be focused on ecological principles to reduce the need for single resource or single species management;**
- **stewardship, the involvement of people working with natural processes, is essential for successful implementation;**
- **the BLM cannot achieve this vision alone but can, by its management processes and through cooperation with others, be a significant contributor to its achievement; and**
- **a carefully designed program of monitoring, research and adaptation will be the change mechanism for achieving this vision.**

Strategy

Lands administered by the BLM will be managed to maintain healthy, functioning ecosystems from which a sustainable production of natural resources can be provided. This management strategy, called ecosystem management, involves the use of ecological, economic, social, and managerial principles to achieve healthy and sustainable natural systems. Ecosystem management emphasizes the complete ecosystem instead of individual components and looks at sustainable systems and products that people want and need.

The building blocks for this strategy are comprised of several major land use allocations— Riparian Reserves, Late-Successional Reserves, Adaptive Management Areas, and Matrix which includes General Forest Management Areas and Connectivity/Diversity Blocks. These land use allocations have differing management direction and are located and configured in the landscape to support overall ecosystem function and to meet the vision for management of federal lands in western

Oregon. Additional allocations include a variety of special purpose management areas such as recreation sites, wild and scenic rivers, and visual resource management areas.

Each land use allocation will be managed according to specific objectives and management actions/direction. During initial implementation of the plan, the stated objectives and management actions/direction will provide the direction and limits governing actions and the principles specifying the environmental conditions or levels to be achieved and maintained. As the BLM gains experience in implementing the plan and applying the concepts of adaptive management, the stated objectives and management actions/direction may be refined for specific geographic areas.

The major land use allocations of the resource management plan are as follows:

Major Land Allocations	Acres[1]
Late-Successional Reserves	
Outside the Adaptive Management Area	132,100
Inside the Adaptive Management Area[2]	79,700
Other Adaptive Management Area[2] (NonLSR)	43,700
General Forest Management Area	107,300
Connectivity/Diversity Blocks	27,400
Other[3]	7,900
Total	398,100

[1] There are 221,800 acres of Riparian Reserves underlying all of the allocations shown in this chart. Overlaps could not be eliminated due to limitations in the database. There are no overlaps in the other acres.

[2] Total Adaptive Management Area acreage is 123,400.

[3] This category includes a District-Designated Reserve and Table Rock Wilderness.

A summary of all land allocations and management actions/direction is presented in appendix A-1.

Maps of resource management plan land use allocations are located in the accompanying map packet. (Riparian Reserves are not mapped.)

There are two major management concepts underlying the objectives and management actions/direction— Ecological Principles for Management of Late-Successional Forests and the Aquatic Conservation Strategy. These concepts are summarized below.

Ecological Principles for Management of Late-Successional Forests

One goal of the resource management plan is to maintain late-successional and old-growth species habitat and ecosystems on federal lands. A second goal is to maintain biological diversity associated with native species and ecosystems in accordance with laws and regulations.

All land use allocations described in this resource management plan will contribute to these two goals. For instance, Late-Successional Reserves, Riparian Reserves, and special management areas (e.g., areas of critical environmental concern) will be managed to enhance and/or maintain late-successional forest conditions. The General Forest Management Area and Connectivity/Diversity Blocks will be managed to retain coarse woody debris, green trees, snags, and some late-successional forest. These and other land use allocations and resource programs are described in detail below.

See the SEIS record of decision (appendix A-2) for additional information about ecological principles for management of late-successional forests.

Aquatic Conservation Strategy

The Aquatic Conservation Strategy was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The strategy will protect salmon and steelhead habitat on federal lands managed by the Forest Service and the BLM within the range of the Pacific Ocean anadromy.

The Aquatic Conservation Strategy is designed to meet the following objectives:

- Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

- Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, up slope areas, headwater tributaries, and intact refugia. These lineages must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.
- Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
- Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain in the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.
- Maintain and restore the sediment regime under which an aquatic ecosystem evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.
- Maintain and restore instream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing (i.e., movement of woody debris through the aquatic system). The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.
- Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.
- Maintain and restore the species composition and structural diversity of plant communities In riparian zones and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.
- Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

The components of the Aquatic Conservation Strategy are Riparian Reserves, Key Watersheds, Watershed Analysis, and Watershed Restoration.

Riparian Reserves

See Riparian Reserves in the Land Use Allocations section.

Key Watersheds

A system of Key Watersheds that serve as refugia is crucial for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species. These refugia include areas of high quality habitat and areas of degraded habitat. Key Watersheds with high quality conditions will serve as anchors for the potential recovery of depressed stocks. Those of lower quality habitat have high potential for restoration and will become future sources of high quality habitat with the implementation of a comprehensive restoration program.

There are two types of Key Watersheds— Tier 1 and Tier 2. Tier 1 watersheds contribute directly to conservation of at-risk anadromous salmonids, bull trout, and resident fish species. They also have a high potential of being restored as part of a watershed restoration program.

Tier 1 Key Watersheds in the district and BLM-administered acres in each watershed are as follows:

Key Watershed Name	Approx. Acres
Clackamas River Corridor	400
Collawash River	800
Drift Creek (Alsea)	1,100
Drift Creek (Siletz)	2,000
Elkhorn Creek (Trask)	2,200
Fish Creek	200
Kilchis River	3,300
Little North Santiam River	13,600
Lower North Fork Wilson River	1,400
North Fork Siletz River	4,400
Salmon River	1,400
Tobe Creek	1,800
Upper Lobster Creek	13,500
Upper Nestucca River	35,800
Yachats	70
Total	81,970

See map 3 for locations of Tier 1 Key Watersheds.

Tier 2 watersheds do not contain at-risk fish stocks, but they are important sources of high quality water. The Tier 2 watersheds in the Salem District are Bull Run River, Little Sandy River, and Eagle Creek.

Key Watersheds overlay other land use allocations in the district and place additional management requirements or emphasis on activities in those areas.

The non-interchangeable component of the allowable sale quantity, attributable to Key Watersheds, is 0.51 million cubic feet. Identification of this component was required by the SEIS record of decision, pages E-19 and E-20.

Management Actions/Direction

- Prior to further resource management activity, including timber harvest, in Key Watersheds, prepare watershed analyses. Until watershed analyses can be completed, proceed with minor activities, such as those categorically excluded under the National Environmental Policy Act regulations (except timber harvest), if they are consistent with Aquatic Conservation Strategy objectives. Apply Riparian Reserve management actions/direction.
- Reduce existing road mileage within Key Watersheds. If funding is insufficient to implement reductions, neither construct nor authorize through discretionary permits a net increase in road mileage in Key Watersheds.
- Give highest priority to watershed restoration in Key Watersheds.

Watershed Analysis

See Watershed Analysis (toward the end of this section) and the SEIS record of decision (appendix A-2) for requirements.

Watershed Restoration

Watershed restoration will be an integral part of a program to aid recovery of fish habitat, riparian habitat, and water quality. The most important components of a watershed restoration program are control and prevention of road-related runoff and sediment production, restoration of the condition of riparian vegetation, and restoration of instream habitat complexity. Other restoration opportunities include meadow and wetland restoration and mine reclamation.

Management Actions/Direction

- Prepare watershed analyses and plans prior to restoration activities. See Watershed Analysis (toward the end of this section).
- Focus watershed restoration on removing some roads and, where needed, upgrading those that remain in the system.
- Apply silvicultural treatments to restore large conifers in Riparian Reserves.
- Restore stream channel complexity. Instream structures will only be used in the short term and not as a mitigation measure.

Additional information about the Aquatic Conservation Strategy is found in the SEIS record of decision (appendix A-2).

Land Use Allocations and Resource Programs

This section provides a description of objectives, land use allocations, and management actions/direction for the resource management plan. The term “land use allocations” is used in two ways. First, it pertains to the major land use allocations derived from the SEIS and its record of decision (e.g., Riparian Reserves and Late-Successional Reserves) and the other resource program allocations of this resource management plan. The second use pertains to data and text describing specific allocations (e.g., acres, miles, and number of sites) under each major land use allocation and resource program.

The rest of this Land Use Allocations and Resource Programs description has two major parts:

- Major land use allocations— objectives, allocations, and management actions/direction for each major land use allocation; and
- Resource programs— objectives, allocations, and management actions/direction for each resource program.

Although described separately, each of these elements contributes collectively and cumulatively to meeting the overall management strategy and must be considered together to accurately reflect the concept of ecosystem management. There is some duplication of objectives and management actions/direction for major land use allocations and resource programs. A reader interested in either topic will find a basic package of related management guidance in one location.

All management actions/direction in this resource management plan are subject to refinement through planning based on watershed analysis and the adaptive management process. In some areas, land use allocations overlap. A hierarchy of allocations and related management actions/direction will be used to guide plan implementation (see the SEIS record of decision, appendix A-2).

Most resource programs have basic requirements for activities such as inventory, site-specific analysis, planning, and environmental assessment prior to project implementation and monitoring after project implementation. Inherent in the resource management plan is a BLM commitment to continue these activities in the future. For the sake of simplifying text, these activities are generally not repeated in the management actions/direction that follow.

Major Land Use Allocations

The land use allocations developed for the SEIS record of decision and applicable to BLM-administered lands in the Salem District are Riparian Reserves, Late-Successional Reserves, Adaptive Management Areas, and Matrix.

Two of the allocations in the SEIS record of decision, Congressionally Reserved Areas and Administratively Withdrawn Areas, recognize existing and proposed BLM management. These allocations are fully incorporated in the resource program elements of this resource management plan. They are not described as separate land use allocations in this document.

Congressionally reserved areas are Yaquina Head Outstanding Natural Area, Table Rock Wilderness and four designated wild and scenic rivers—Clackamas, Salmon and Sandy rivers and Quartzville Creek.

The types of administratively withdrawn areas in the district include air navigation site, lighthouse, fish hatchery, seed orchard, special recreation management area, communication site, research natural area, electric power generation facility, potential power development area, and some Timber Production Capability Classifications.

Land use allocation acres in the text are gross acres (i.e., overlaps with other allocations are not taken out).

The SEIS record of decision provides management guidance for a specific list of plant and animal species which are or may be found in the major land allocation areas (see appendix B-1). In this resource management plan, these species are referred to as "SEIS Special Attention Species". Management guidance is separated in two categories— "Survey and Manage" and "Protection Buffers".

Management Actions/Direction — Survey and Manage for Amphibians, Mammals, Bryophytes, Mollusks, Vascular Plants, Fungi, Lichens, and Arthropods

Survey and manage for SEIS special attention species within the range of the species and the particular habitats that they are known to occupy. Appendix B-1 lists which species are covered by this provision, and which of the following four categories and management actions/direction are to be applied to each:

1. Manage known sites (highest priority).
   - Acquire and manage information on known sites, make it available to all project planners, and use it to design or modify activities.
   - Protect known sites. For some species, apply specific management treatments such as prescribed fire.
   - For rare and endemic fungus species, temporarily withdraw 160 acres around known sites from ground-disturbing activities until the sites can be thoroughly surveyed and site-specific measures prescribed.
   - Establish management areas of all usable habitat up to 600 acres around two currently unprotected locations of *Oxyporous nobilissimus*. Protect these populations until the sites can be thoroughly surveyed and site-specific measures prescribed. Protection will be undertaken immediately.
2. Survey prior to management activities and manage sites.
   - Continue existing efforts to survey and manage rare and sensitive species habitat.

- For species without survey protocols, start immediately to design protocols and implement surveys.
- Within the known or suspected ranges and within the habitat types of vegetation communities associated with the species, survey for Larch Mountain salamanders and red tree voles. These surveys will precede the design of all ground-disturbing activities that will be implemented in 1997 or later.
- For the other species listed in appendix B, begin development of survey protocols promptly and proceed with surveys as soon as possible. These surveys will be completed prior to ground-disturbing activities that will be implemented in fiscal year 1999 or later. Work to establish habitat requirements and survey protocols may be prioritized relative to the estimated threats to the species as reflected in the SEIS.
- Conduct surveys at a scale most appropriate to the species.
- Develop management actions/direction to manage habitat for the species on sites where they are located.
- Incorporate survey protocols and proposed site management in interagency conservation strategies developed as part of ongoing planning efforts coordinated by the Regional Ecosystem Office.

3. Conduct extensive surveys and manage sites.
   - Conduct extensive surveys for the species to find high-priority sites for species management. Specific surveys prior to ground-disturbing activities are not a requirement.
   - Conduct surveys according to a schedule that is most efficient and identify sites for protection at that time.
   - Design these surveys for efficiency and develop standardized protocols.
   - Begin these surveys by 1996.
4. Conduct general regional surveys.
   - Survey to acquire additional information and to determine necessary levels of protection for arthropods, fungi species that were not classed as rare and endemic, bryophytes, and lichens.
   - Initiate these surveys no later than fiscal year 1996 and complete them within ten years.

Management Actions/Direction — Protection Buffers for Amphibians, Nonvascular Plants, Birds, and Mammals

Provide protection buffers for specific rare and locally endemic species and other species in the upland forest matrix. A list of these species is found in appendix B-1 and related management actions/direction are described in the Special Status and SEIS Special Attention Species and Habitat section. These species are likely to be assured viability if they occur within reserves. However, there might be occupied locations outside reserves that will be important to protect as well.

Apply the following management actions/direction:

- Develop survey protocols that will ensure a high likelihood of locating sites occupied by these species.
- Following development of survey protocols and prior to ground-disturbing activities, conduct surveys within the known or suspected ranges of the species and within the habitat types or vegetation communities occupied by the species. See the previous Survey and Manage section for an implementation schedule.
- When located, protect the occupied sites.

See Special Status and SEIS Special Attention Species and Habitat section for additional details.

Riparian Reserves

The following material summarizes management direction for Riparian Reserves. Details regarding this direction are found in the SEIS record of decision (appendix A-2).

Objectives

See Aquatic Conservation Strategy Objectives.

Provide habitat for special status, SEIS special attention and other terrestrial species.

Land Use Allocations

There are approximately 221,800 acres of Riparian Reserves in the district. Calculation of these acres is based on prescribed widths and estimated miles of stream in the various categories described in the SEIS record of decision. The widths are intended to provide a high level of fish, wildlife and plant habitat and riparian protection until watershed and site analysis can be completed. Although Riparian Reserve boundaries on permanently flowing streams may be adjusted, they are considered to be the approximate widths necessary for attaining Aquatic Conservation Strategy objectives. Post-watershed analysis Riparian Reserve boundaries for permanently flowing streams will approximate the widths described below. Following watershed analysis, Riparian Reserve boundaries for intermittent streams may be different from the existing boundaries. Determination of final boundaries will be based on hydrologic, geomorphic and ecologic processes in a watershed affecting intermittent streams. The widths of Riparian Reserves apply to all watersheds until watershed analysis is completed, a site-specific analysis is conducted and described, and the rationale for final Riparian Reserve boundaries is presented through the appropriate National Environmental Policy Act decision-making process.

The initial Riparian Reserve widths are as follows:

Fish-bearing streams. Riparian Reserves consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300-feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest.

Permanently flowing non-fish-bearing streams. Riparian Reserves consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150-feet slope distance, whichever is greatest.

Seasonally flowing or intermittent streams, wetlands less than one acre, and unstable and potentially unstable areas. This category applies to features with high variability in size and site-specific characteristics. At a minimum the Riparian Reserve will include:

- the extent of unstable and potentially unstable areas;
- the stream channel and the area extending to the top of the inner gorge;
- the stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation; and
- the area extending from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100-feet slope distance, whichever is greatest.

Constructed ponds and reservoirs, and wetlands larger than one acre. Riparian Reserves consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or to 150-feet slope distance from the edge of a wetland greater than one acre or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest. (Riparian vegetation and seasonally saturated soils will generally constitute a wetland and will be managed as prescribed for wetlands.)

Lakes and natural ponds. Riparian Reserves consist of the body of water and the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a distance equal to the height of two site-potential trees, or 300-feet slope distance, whichever is greatest. (Riparian vegetation and seasonally saturated soils will generally constitute a wetland and will be managed as prescribed for wetlands.)

Management Actions/Direction

As a general rule, management actions/direction for Riparian Reserves prohibit or regulate activities that retard or prevent attainment of Aquatic Conservation Strategy objectives. Watershed analysis and appropriate National Environmental Policy Act compliance will be required to change Riparian Reserves in any watershed.

Implement the following management actions/direction in Riparian Reserves. (Management actions/direction in this section are supplemented by Best Management Practices in appendix C.)

General

Apply the management actions/direction in the Special Status and SEIS Special Attention Species and Habitat section.

Timber Management

Neither conduct nor allow discretionary timber harvest, including fuelwood cutting, in Riparian Reserves, with exception of the following:

- **Where catastrophic events such as fire, flooding, volcanic eruptions, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting if required to attain Aquatic Conservation Strategy objectives.**
- **Remove salvage trees only when watershed analysis determines that present and future woody debris needs are met and other Aquatic Conservation Strategy objectives are not adversely affected.**
- **Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives.**

Riparian Reserve acres are not included in calculations of the allowable sale quantity.

Roads Management

Cooperate with federal, state, and county agencies and work with private parties with road use agreements to achieve consistency in road design, operation, and maintenance necessary to attain Aquatic Conservation Strategy objectives.

For each existing or planned road, meet Aquatic Conservation Strategy objectives by:

- **completing watershed analyses including appropriate geotechnical analyses (i.e., examining soil and rock conditions in riparian and stream crossings) prior to construction of new roads or landings in Riparian Reserves;**
- **minimizing road and landing locations in Riparian Reserves;**
- **preparing road design criteria, elements, and standards that govern construction and reconstruction;**
- **preparing operation and maintenance criteria that govern road operation, maintenance, and management; minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow;**
- **restricting sidecasting as necessary to prevent the introduction of sediment to streams; and**
- **avoiding wetlands entirely when constructing new roads.**

Determine the influence of each road on the Aquatic Conservation Strategy objectives through watershed analysis. Meet Aquatic Conservation Strategy objectives by:

- **reconstructing roads and associated drainage features that pose a substantial risk;**
- **prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected; and**
- **closing and stabilizing, or obliterating and stabilizing roads based on the ongoing and potential effects to Aquatic Conservation Strategy objectives and considering short-term and long-term transportation needs.**

Design and construct new culverts, bridges and other stream crossings and improve existing culverts, bridges and other stream crossings determined to pose a substantial risk to riparian conditions. New structures and improvements will be designed to accommodate at least the 100-year flood, including associated bedload and debris. Priority for upgrading will be based on the potential impact and the ecological value of the riparian resources affected. Crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.

Minimize sediment delivery to streams from roads. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslopes.

Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams (e.g., streams which can be made available to anadromous fish by removing obstacles to passage).

Management Actions/Direction, continued

Develop and implement a Road Management Plan or a Transportation Management Plan that will meet the Aquatic Conservation Strategy objectives. As a minimum, this plan will include provisions for the following activities:

- **inspections and maintenance during storm events;**
- **inspections and maintenance after storm events;**
- **road operation and maintenance giving high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources;**
- **traffic regulation during wet periods to prevent damage to riparian resources; and**
- **establishing the purpose of each road by developing the Road Management objective.**

Recreation Management

Design new recreational facilities within Riparian Reserves, including trails and dispersed sites, so as not to prevent meeting Aquatic Conservation Strategy objectives. Construction of these facilities should not prevent future attainment of these objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impacts to ensure that these do not prevent, and to the extent practicable contribute to, attainment of Aquatic Conservation Strategy objectives.

Adjust dispersed and developed recreation practices that retard or prevent attainment of Aquatic Conservation Strategy objectives. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice or occupancy.

Address attainment of Aquatic Conservation Strategy objectives in wild and scenic river and wilderness management plans.

Minerals Management

NOTE: The following management actions/direction differ from the standards and guidelines in the SEIS record of decision, since the standards and guidelines are not all implementable under current laws and regulations. The stronger standards and guidelines in the SEIS record of decision (see appendix A-2) will be adopted at such time as changes in current laws and/or regulations authorize their implementation.

For any proposed locatable mining operation in Riparian Reserves, other than notice level (activity on less than five acres) or casual use, require the following actions by the operator consistent with 43 Code of Federal Regulations 3809:

- **Prepare a Plan of Operations, including a reclamation plan and reclamation bond for all mining operations in Riparian Reserves. Such plans and bonds will address the costs of removing facilities, equipment, and materials; recontouring of disturbed areas to an approved topography; isolating and neutralizing or removing toxic or potentially toxic materials; salvaging and replacing topsoil; and revegetating to meet Aquatic Conservation Strategy objectives.**
- **Locate structures, support facilities, and roads outside Riparian Reserves. If no alternative to siting facilities in Riparian Reserves exists, locate in a way compatible with Aquatic Conservation Strategy objectives. Road construction will be kept to the minimum necessary for the approved mineral activity. Roads will be constructed and maintained to meet road management standards and to minimize damage to resources in Riparian Reserves. When a road is no longer required for mineral or land management activities, it will be reclaimed. In any case, access roads will be constructed consistent with 43 Code of Federal Regulations 3809 and acceptable road construction standards and will minimize damage to resources in Riparian Reserves.**
- **Avoid locating solid and sanitary waste facilities in Riparian Reserves. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in Riparian Reserves exists, if releases can be prevented, and if stability can be ensured, then:**
  - **Analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics.**
  - **Locate and design the waste facilities using best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in Riparian Reserves.**

- Reclaim waste facilities after operations to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.
- Monitor waste and waste facilities after operations to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.
- Require reclamation bonds adequate to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.

Where an existing operator is in noncompliance at the notice level (i.e., causing unnecessary or undue degradation), require actions similar to those stated above to meet the intent of 43 Code of Federal Regulations 3809.

For leasable mineral activity in Riparian Reserves, prohibit surface occupancy for oil, gas, and geothermal exploration and development activities where leases do not exist. Where possible, adjust the stipulations in existing leases to eliminate impacts that retard or prevent the attainment of Aquatic Conservation Strategy objectives, consistent with existing lease terms and stipulations.

Allow development of salable minerals, such as sand and gravel, within Riparian Reserves only if Aquatic Conservation Strategy objectives can be met.

Develop inspection and monitoring requirements and include such requirements in exploration and mining plans and in leases or permits consistent with existing laws and regulations. Evaluate the results of inspection and monitoring to determine if modification of plans, leases and permits is needed to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

Fire/Fuels Management

Design fuel treatment and fire suppression strategies, practices, and activities to meet Aquatic Conservation Strategy objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies will recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management activities could be damaging to long-term ecosystem function.

Locate incident bases, camps, helibases, staging areas, helispots and other centers for incident activities outside of Riparian Reserves. If the only suitable location for such activities is within the Riparian Reserve, an exemption may be granted following a review and recommendation by a resource advisor. The advisor will prescribe the location, use conditions, and rehabilitation requirements. Utilize an interdisciplinary team to predetermine suitable incident base and helibase locations.

Minimize delivery of chemical retardant, foam, or other additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor, when an escape would cause more long-term damage.

Design prescribed burn projects and prescriptions to contribute to attainment of Aquatic Conservation Strategy objectives.

Immediately establish an emergency team to develop a rehabilitation treatment plan needed to attain Aquatic Conservation Strategy objectives whenever Riparian Reserves are significantly damaged by a wildfire or a prescribed fire burning outside prescribed parameters.

Until watershed analysis is completed for a watershed, suppress wildfire to avoid loss of habitat and to maintain future management options.

Consider allowing some natural fires to burn under prescribed conditions. This decision will be based on additional analysis and planning.

Consider rapidly extinguishing smoldering coarse woody debris and duff.

Locate and manage water drafting sites (e.g., sites where water is pumped to control or suppress fires) to minimize adverse effects on riparian habitat and water quality as consistent with Aquatic Conservation Strategy objectives.

Lands

Identify instream flows needed to maintain riparian resources, channel conditions, and fish passage.

Issue leases, permits, rights-of-way, and easements to avoid adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives. Where legally possible, adjust existing leases, permits, rights-of-way, and easements to eliminate adverse effects that retard or prevent the attainment of Aquatic Conservation

Management Actions/Direction, continued

Strategy objectives. If adjustments are not effective and where legally possible, eliminate the activity. Priority for modifying existing leases, permits, rights-of-way and easements will be based on the actual or potential impact and the ecological value of the riparian resources affected.

Use land acquisition, exchange, and conservation easements to meet Aquatic Conservation Strategy objectives and facilitate restoration of fish stocks and other species at risk of extinction.

For proposed hydroelectric projects under the jurisdiction of the Federal Energy Regulatory Commission (the Commission), provide timely, written comments regarding maintenance of instream flows and habitat conditions and maintenance/restoration of riparian resources and stream channel integrity. Request the Commission to locate proposed support facilities outside of Riparian Reserves. For existing support facilities inside Riparian Reserves that are essential to proper management, provide recommendations to the Commission that ensure Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, provide recommendations to the Commission that such support facilities should be relocated. Existing support facilities that must be located in the Riparian Reserves should be located, operated, and maintained with an emphasis to eliminate adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives.

For other hydroelectric and surface water development proposals in Tier 1 Key Watersheds, require instream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage. Coordinate this process with the appropriate state agencies. For other hydroelectric and surface water development proposals in all other watersheds, give priority emphasis to instream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage. Coordinate this process with the appropriate state agencies.

General Riparian Area Management

Identify and attempt to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.

Fall trees in Riparian Reserves when they pose a safety risk. Keep trees on site when needed to meet coarse woody debris objectives.

Apply herbicides, insecticides, other toxicants, and other chemicals only in a manner that avoids impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

Locate water drafting sites to minimize adverse effects on stream channel stability, sedimentation, and instream flows needed to maintain riparian resources, channel conditions, and fish habitat.

Watershed and Habitat Restoration

Design and implement watershed restoration projects in a manner that promotes long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and attains Aquatic Conservation Strategy objectives.

Cooperate with federal, state, local, and tribal agencies, and private landowners to develop watershed-based coordinated resource management plans or other cooperative agreements to meet Aquatic Conservation Strategy objectives.

Prevent watershed and habitat degradation rather than relying on mitigation measures or planned restoration.

Fish and Wildlife Management

Design and implement fish and wildlife habitat restoration and enhancement activities in a manner that contributes to attainment of Aquatic Conservation Strategy objectives.

Design, construct and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of Aquatic Conservation Strategy objectives. For existing fish and wildlife interpretative and other user-enhancement facilities inside Riparian Reserves, ensure that Aquatic Conservation Strategy objectives are met. Where Aquatic Conservation Strategy objectives cannot be met, relocate or close such facilities.

Cooperate with federal, tribal, and state wildlife management agencies to identify and eliminate wild ungulate impacts that are inconsistent with attainment of Aquatic Conservation Strategy objectives.

Cooperate with federal, tribal, and state fish management agencies to identify and eliminate impacts associated with habitat manipulation, fish stocking, harvest and poaching that threaten the continued existence and distribution of native fish stocks inhabiting streams with adjacent or nearby federal lands.

Late-Successional Reserves

The following material summarizes management direction for Late-Successional Reserves. Details regarding this direction are found in the SEIS record of decision (appendix A-2).

Objectives

Protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth forest-related species including the northern spotted owl and marbled murrelet.

Maintain a functional, interacting, late-successional and old-growth forest ecosystem.

Land Use Allocations

There are approximately 211,800 acres of mapped Late-Successional Reserves in the Salem District. Of this total, 79,700 acres are in the Northern Coast Range Adaptive Management Area and 5,800 acres are in Table Rock Wilderness.

An additional 1,800 acres of District-Designated Reserve will be managed the same as Late-Successional Reserves. Although not included in the allocations of the SEIS record of decision, the District-Designated Reserve is a logical addition to an adjacent Late-Successional Reserve on Forest Service land.

The six components of the Late-Successional Reserve system in the Salem District are:

- **Mapped Late-Successional Reserves.**
  These reserves incorporate Key Watersheds to the extent practicable; some or parts of the Late-Successional/Old Growth 1 and 2 areas identified by the Scientific Panel on Late-Successional Forest Ecosystems; and some or parts of the Designated Conservation Areas from the Final Draft Spotted Owl Recovery Plan.
- **Late-Successional/Old Growth 1 and 2 areas within marbled murrelet zone 1 as mapped by the Scientific Panel on Late-Successional Forest Ecosystems.**
- **In the Northern Coast Range Adaptive Management Area, certain owl addition areas as mapped by the Scientific Panel on Late-Successional Forest Ecosystems.**
- **Occupied Marbled Murrelet Sites**
  See Special Status and SEIS Special Attention Species and Habitat section.
- **Known Spotted Owl Activity Centers**
  (as of January 1, 1994).

  See Special Status and SEIS Special Attention Species and Habitat section.
- **Protection Buffers**
  See Special Status and SEIS Special Attention Species and Habitat section.

See map 4 for locations of Late-Successional Reserves and the District-Designated Reserve. Occupied marbled murrelet sites and protection buffers are unmapped.

Management Actions/Direction

General

Manage the Late-Successional Reserve within the Northern Coast Range Adaptive Management Area as follows:

- Through the Adaptive Management Area plan, reconsider the designation and/or the management actions/direction established for all Late-Successional Reserves.
- If needed to create and maintain late-successional forest conditions, conduct thinning operations in forest stands up to the 110-year age class (106 to 115 years). This will be accomplished by precommercial or commercial thinning of stands regardless of origin (e.g., planted after logging or naturally regenerated after fire or blowdown).

Manage the Late-Successional Reserve common to Table Rock Wilderness in accordance with the approved wilderness management plan.

Apply the management actions/direction in the Special Status and SEIS Special Attention Species and Habitat section.

Management Actions/Direction, continued

Develop Late-Successional Reserve assessments prior to habitat manipulation.

These assessments may be developed as part of province-level planning or as stand-alone assessments. If developed to stand alone, the assessments will be closely coordinated with subsequent watershed analysis and province-level planning. SEIS record of decision standards and guidelines should be refined at the province level prior to development of Late-Successional Reserve assessments. Late-Successional Reserve assessments will generally include:

- **a history and inventory of overall vegetative conditions within the reserve;**
- **a list of identified late-successional associated species known to exist within the Late-Successional Reserve and information on their locations;**
- **a history and description of current land uses within the reserve;**
- **a fire management plan;**
- **criteria for developing appropriate treatments;**
- **identification of specific areas that could be treated under those criteria;**
- **a proposed implementation schedule tiered to higher order (i.e., larger scale) plans; and**
- **proposed monitoring and evaluation components to help evaluate if future activities are carried out as intended and achieve desired results.**

Only in unusual circumstances will silvicultural treatments, including prescribed fire, precede preparation of this management assessment. Late-Successional Reserve assessments are subject to review by the Regional Ecosystem Office. Until Late-Successional Reserve assessments are completed, fire suppression activities should be guided by land allocation objectives in coordination with local resource management specialists.

Projects and activities within Late-Successional Reserves (including restoration, recreation, projects for public safety, thinning and salvage) may proceed in fiscal years 1995 and 1996 using initial Late-Successional Reserve assessments done at a level of detail sufficient to assess whether the activities are consistent with the objectives of the Late-Successional Reserves.

Plan and implement nonsilvicultural activities inside Late-Successional Reserves that are neutral or beneficial to the creation and maintenance of late-successional habitat.

Using interdisciplinary teams, evaluate other activities not described below and document appropriate guidelines.

Request review by the Regional Ecosystem Office of all activities deemed to have potential adverse effects on Late-Successional Reserve objectives. The Regional Ecosystem Office may develop additional criteria for exempting some additional activities from review.

Silviculture

Plan and implement silvicultural treatments inside Late-Successional Reserves that are beneficial to the creation of late-successional habitat.

If needed to create and maintain late-successional forest conditions, conduct thinning operations in forest stands up to 80 years of age. This will be accomplished by precommercial or commercial thinning of stands regardless of origin (e.g., planted after logging or naturally regenerated after fire or blowdown).

Salvage

Limit salvage of dead trees in Late-Successional Reserves to areas where stand-replacing events exceed ten acres in size and canopy closure has been reduced to less than 40 percent.

Retain all standing live trees including those injured (e.g., scorched) but likely to survive.

Retain snags that are likely to persist until late-successional forest conditions have developed and a new stand is again producing large snags.

Retain adequate coarse woody debris quantities in a new stand so that in the future it will still contain amounts similar to naturally regenerated stands. Watershed-level or province-level plans will establish appropriate levels of coarse woody debris to be used. Levels will be typical and will not require retention of all material where it is highly concentrated or too small to contribute to coarse woody debris over the long term.

Remove snags and logs to reduce hazards to humans along roads and trails and in or adjacent to recreation sites. Leave some material where coarse woody debris is inadequate.

After disturbance in younger stands, develop diameter and biomass retention direction consistent with the intention of achieving late-successional forest conditions. Where green trees, snags, and logs are present following disturbance, the green tree and snag direction will be applied first and completely satisfied where possible. The biomass left in snags can be credited toward the amount of coarse woody debris biomass needed to achieve management objectives.

Retain logs present on the forest floor before a disturbance event.

Retain coarse woody debris to approximate the species composition of the original stand to help replicate preexisting suitable habitat conditions.

Deviate from these management actions/direction only to provide reasonable access to salvage sites and feasible logging operations. Limit deviations to as small an area as possible.

Road Construction and Maintenance

Construct roads in Late-Successional Reserves if the potential benefits of silviculture, salvage, and other activities exceed the costs of habitat impairment. If new roads are necessary to implement a practice that is otherwise in accordance with these guidelines, they will be kept to a minimum, be routed through unsuitable habitat where possible, and be designed to minimize adverse impacts. Alternative access methods, such as aerial logging, will be considered to provide access for activities in reserves.

Fall trees along rights-of-way if they are a hazard to public safety. Consider leaving material on site if available coarse woody debris is inadequate. Consider topping of trees as an alternative to falling.

Fuelwood Gathering

Permit fuelwood gathering only in existing cull decks, in areas where green trees are marked by silviculturists for thinning, in areas where blowdown is blocking roads, and in recently harvested timber sale units where down material will impede scheduled post-sale activities or pose an unacceptable risk of future large scale disturbance. In all cases these activities will comply with management actions/direction for salvage and silvicultural activities.

Mining

Assess the impacts of ongoing and proposed mining activities in Late-Successional Reserves.

Include stipulations in mineral leases and, when legally possible, require operational constraints for locatable mineral activities to minimize detrimental effects to late-successional habitat.

Developments

Neither construct nor authorize new facilities that may adversely affect Late-Successional Reserves.

Review on a case-by-case basis new development proposals that address public needs or provide significant public benefits. They may be approved when adverse effects can be minimized and mitigated. They will be planned to have the least possible adverse impacts on Late-Successional Reserves.

Locate new developments to avoid degradation of habitat and adverse effects on identified late-successional species.

Retain and maintain existing developments, such as campgrounds, utility corridors, and communication sites, consistent with other management actions/direction for Late-Successional Reserves.

Remove hazard trees along utility rights-of-way and trails and in other developed areas.

Land Exchanges

Consider land exchanges in Late-Successional Reserves if they provide benefits equal to or better than current conditions.

Consider land exchanges especially to improve area, distribution, and quality (e.g., connectivity, shape, and contribution to biological diversity) of Late-Successional Reserves, especially where public and private lands are intermingled.

Management Actions/Direction, continued

Habitat Improvement Projects

Design projects to improve conditions for fish, wildlife, and watersheds if they provide late-successional habitat benefits or if their effect on late-successional associated species is negligible.

Design projects for recovery of threatened or endangered species even if they result in some reduction of habitat quality for other late-successional species.

Design and implement watershed restoration projects consistent with Late-Successional Reserve objectives.

Fire Suppression and Prevention

As part of watershed analysis, plan fire management for each Late-Successional Reserve.

Emphasize maintaining late-successional habitat in wildfire suppression plans.

Use minimum impact suppression methods for fuels management in accordance with guidelines for reducing risks of large-scale disturbances.

During actual fire suppression activities, consult an interdisciplinary team to assure that habitat damage is minimized.

Until a fire management plan is completed for a Late-Successional Reserve or group of reserves, suppress wildfire to avoid loss of habitat and to maintain future management options.

Prepare a specific fire management plan prior to any habitat manipulation activities in Late-Successional Reserves. Specify how hazard reduction and other prescribed fire applications meet the objectives of the Late-Successional Reserve. Until the plan is approved, proposed activities will be subject to review by the Regional Ecosystem Office.

Apply prescribed fire in a manner which retains the amount of coarse woody debris determined through watershed analysis.

Consider allowing some natural fires to burn under prescribed conditions. This decision will be based on additional analysis and planning.

Consider rapidly extinguishing smoldering coarse woody debris and duff.

Special Forest Products

Evaluate whether special forest product harvest activities have adverse effects on Late-Successional Reserve objectives.

Prior to selling special forest products, ensure resource sustainability and protection of other resource values such as special status plant or animal species.

Where special forest product activities are extensive, evaluate whether they have significant effects on late-successional habitat. Restrictions may be appropriate in some cases.

Recreational Uses

Use adjustment measures, such as education, use limitations, traffic control devices, or increased maintenance, when dispersed and developed recreation practices retard or prevent attainment of Late-Successional Reserve objectives.

Rights-of-Way, Contracted Rights, Easements, and Special/Temporary Use Permits

Consider access to nonfederal lands through Late-Successional Reserves. Existing right-of-way agreements, contracted rights, easements and special/temporary use permits are valid uses in Late-Successional Reserves.

For all new rights-of-way proposals, design mitigation measures to reduce adverse effects on Late-Successional Reserves. Consider alternative routes that avoid Late-Successional Reserves. If rights-of-way must be routed through a reserve, design and locate them to have the least impact on late-successional habitat.

Review all special/temporary use permits. When objectives of Late-Successional Reserves are not being met, reduce impacts through education or modification of existing permits.

Nonnative Species

If introduction of a nonnative species is proposed, complete an assessment of impacts and avoid any introduction that would retard or prevent achievement of late-successional objectives.

Evaluate impacts of nonnative species (plant and animal) existing within reserves.

Develop plans and recommendations for eliminating or controlling nonnative species which are inconsistent with Late-Successional Reserve objectives. Include an analysis of effects of implementing such programs on other species or habitats within Late-Successional Reserves.

Protection Buffers

See the Special Status and SEIS Special Attention Species and Habitat section.

Adaptive Management Area

The following material summarizes Adaptive Management Area direction. Details regarding this direction are found in the SEIS record of decision (appendix A-2).

Objectives

Develop and test new management approaches to integrate and achieve ecological and economic health and other social objectives.

Contribute substantially to the achievement of SEIS record of decision objectives, including restoration and maintenance of late-successional forest habitat outside reserves, consistent with marbled murrelet guidelines; retention of key structural elements of late-successional forests on lands subjected to regeneration harvest; restoration and protection of riparian zones; and provision of a stable timber supply.

Land Use Allocations

There are approximately 123,400 acres of BLM-administered land in the Northern Coast Range Adaptive Management Area (see map 3). Of this total 79,700 acres are designated as Late-Successional Reserve within the Adaptive Management Area. These acres include all Late-Successional/ Old Growth 1 and 2 areas within marbled murrelet zone 1, and all owl additions, as mapped by the Scientific Panel on Late-Successional Forest Ecosystems.

Management Actions/Direction

Develop a plan for the Northern Coast Range Adaptive Management Area.

An individual public, interagency approach to planning will be developed for the Adaptive Management Area. The plan should address or provide:

- **A shared vision of the Adaptive Management Area, (e.g., the kind of knowledge the participants hope to gain). Identification of the desired future conditions may be developed in collaboration with communities, depending on the area;**
- **Learning that includes social and political knowledge, not just biological and physical information;**
- **A strategy to guide implementation, restoration, monitoring and experimental activities;**
- **A short-term (three to five year) timber sale plan and long-term yield projections;**
- **Education of participants;**
- **A list of communities influenced by the Adaptive Management Area projects and outputs;**
- **An inventory of community strategies, and resources and partners being used;**
- **Coordination with overall activities within the province;**
- **A funding strategy; and**
- **Integration of the community strategies and technical objectives.**

During Adaptive Management Area planning, review relevant objectives, land use allocations, and management actions/direction for resource programs established in this resource management plan. They may be modified in the Adaptive Management Area plan based on site-specific analyses. Otherwise, management actions/direction will be developed to meet the objectives of the Adaptive Management Area and the overall strategy. Development of management guidance will be coordinated with the Regional Ecosystem Office through the Regional Interagency Executive Committee.

Proceed with management activities in the Adaptive Management Area while the plan is being developed. Initiation of activities will not be delayed by requirements for comprehensive plans or consen-

Management Actions/Direction, continued

sus documents beyond those needed to meet existing legal requirements for activities.

Apply the management actions/direction in the Special Status and SEIS Special Attention Species and Habitat section.

With one exception, manage mapped and unmapped Late-Successional Reserves in accordance with management actions/direction stated previously. The exception involves maximum thinning age. In this Adaptive Management Area, thinning to create and maintain late-successional forest conditions may occur up to the 110-year age class (106 to 115 years).

Design management activities around these reserves to reduce the risk of natural disturbances.

Protect riparian areas in a manner comparable to that prescribed for other federal land areas. Desired conditions may be achieved in a manner different than that prescribed for other areas, and research projects may be conducted within riparian zones. During analysis of Riparian Reserve widths, consider the contribution of these reserves to aquatic and terrestrial species. Through watershed analysis, take into account all species that were intended to benefit by the prescribed Riparian Reserve widths (i.e., fish, mollusks, amphibians, lichens, fungi, bryophytes, vascular plants, American marten, red tree voles, bats, marbled murrelets, and northern spotted owls).

Manage coarse woody debris, green trees and snags in a manner which meets the intent of the management actions/direction for the Matrix. There are no specific management actions/direction for these forest components in the Adaptive Management Area.

Modify site treatment practices, particularly the use of fire and pesticides, and modify harvest methods to minimize soil and litter disturbance as follows:

- Minimize intensive burning, unless appropriate for certain specific habitats, communities, or stand conditions. Prescribed fires should be planned to minimize the consumption of litter and coarse woody debris.
- Minimize soil and litter disturbance that may occur as a result of yarding and operation of heavy equipment.
- Reduce the intensity and frequency of site treatments.

Provide for old-growth fragments in watersheds where little remains. The Matrix management action/direction for retaining late-successional forest in fifth field watersheds (see Matrix section for details) will be considered as a threshold for analysis in Adaptive Management Area planning rather than a strict management action/direction. The role of remaining late-successional forest stands will be fully considered in watershed analysis before they can be modified.

Explore and support opportunities to research the role and effects of fire/fuels management on ecosystem functions.

Emphasize fire/fuels management cooperation across agency and ownership boundaries.

Follow the hazard reduction management actions/direction in this resource management plan (see Fire/Fuels Management section) until the Adaptive Management Area plan is completed.

Use accepted wildfire suppression strategies and tactics and conform to specific agency policy.

Matrix

(Connectivity/Diversity Blocks and General Forest Management Area)

Objectives

Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability.

Provide connectivity (along with other allocations such as Riparian Reserves) between Late-Successional Reserves.

Provide habitat for a variety of organisms associated with both late-successional and younger forests.

Provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags, and large trees.

Provide early successional habitat.

Land Use Allocations

In the Matrix, there are approximately 107,300 acres of BLM-administered land in the General Forest Management Area and approximately 27,400 acres in Connectivity/Diversity Blocks. Connectivity/Diversity Blocks vary in size and are distributed throughout the Matrix. See map 3 for the locations of these land allocations.

Management Actions/Direction

Apply the management actions/direction in the Special Status and SEIS Special Attention Species and Habitat section.

Conduct timber harvest and other silvicultural activities in that portion of the Matrix with suitable forest lands, according to management actions/direction summarized below and in the Timber section.

Conduct timber harvest so as to provide a renewable supply of large down logs well distributed across the Matrix landscape in a manner that meets the needs of species and provides for ecological functions. Down logs will reflect the species mix of the original stand. Models for groups of plant associations and stand types will be developed and used as a baseline for developing prescriptions. Specific measures to accomplish this are as follows:

- **In a cutting area, leave a minimum of 240 linear feet of logs per acre, averaged over the area and reflecting the species mix of the original stand. All logs will be at least 20 inches in diameter at the large end, and be at least 20 feet in length. Logs will be distributed throughout a cutting area, and not piled or concentrated in a few areas. Decay class 1 and 2 logs will be credited toward the total. Where this management action/direction cannot be met with existing coarse woody debris, merchantable material will be used to make up the deficit.**
- **In areas of partial harvest, apply the same basic management actions/direction, but they can be modified to reflect the timing of stand development cycles where partial harvest is practiced.**
- **Retain coarse woody debris already on the ground and protect it to the greatest extent possible from disturbance during treatment (e.g., slash burning and yarding) which might otherwise destroy the integrity of the substrate.**

Retain green trees and snags throughout the General Forest Management Area as follows:

- **Retain six to eight green conifer trees per acre in regeneration harvest units.**
- **Retain snags within a timber harvest unit at levels sufficient to support species of cavity-nesting birds at 40 percent of potential population levels. Meet the 40 percent minimum throughout the Matrix with per acre requirements met on average areas no larger than 40 acres.**
- **In addition to the previous green tree retention management action/direction, retain green trees for snag recruitment in timber harvest units where there is an identified, near-term (less than three decades) snag deficit. These trees do not count toward green-tree retention requirements.**

Provide Connectivity/Diversity Blocks spaced throughout the Matrix. Manage the blocks as follows:

- **Maintain 25 to 30 percent of each block in late-successional forest at any point in time. Riparian Reserves and other allocations with late-successional forest count toward this percentage. Blocks may be comprised of contiguous or noncontiguous BLM-administered lands. The size and arrangement of habitat within a block will provide effective habitat to the extent possible.**
- **Manage available forest land on a 150-year rotation.**
- **When an area is regeneration harvested, retain 12 to 18 green trees per acre.**

Modify site treatment practices, particularly the use of fire and pesticides, and modify harvest methods to minimize soil and litter disturbance. Plan and implement treatments to:

- **Minimize intensive burning, unless appropriate for certain specific habitats, communities, or stand conditions. Prescribed fires should be planned to minimize the consumption of litter and coarse woody debris.**
- **Minimize soil and litter disturbance that may occur as a result of yarding and operation of heavy equipment.**
- **Reduce the intensity and frequency of site treatments.**

Retain late-successional forest patches in landscape areas where little late-successional forest persists. This management action/direction will be applied in fifth field watersheds (20 to 200 square

Management Actions/Direction, continued

miles) in which federal forest lands are currently comprised of 15 percent or less late-successional forest. (The assessment of 15 percent will include all federal land allocations in a watershed.) Within such an area, protect all remaining late-successional forest stands. Protection of these stands could be modified in the future when other portions of a watershed have recovered to the point where they could replace the ecological roles of these stands.

Retain 100 acres of the best northern spotted owl habitat as close as possible to a nest site or owl activity center for all known (as of January 1, 1994) spotted owl activity centers.

Additional information about Matrix management is found in the SEIS record of decision (appendix A-2).

Resource Programs

The following material includes objectives, land use allocations, and management actions/direction for the resource uses and programs which BLM manages in the Salem District. Some of the management actions/direction in the previous land use allocation section are repeated in this section. The intent of this duplication is to give a reader a package of related management guidance in one location.

Air Quality

Objectives

Continue efforts to meet National Ambient Air Quality Standards, Prevention of Significant Deterioration goals, and the visibility protection plan.

Maintain and enhance air quality and visibility in a manner consistent with the Clean Air Act and the state implementation plan.

Reduce the potential for wildfire emissions through the use of prescribed fire and other fuels management techniques.

Land Use Allocations

None.

Management Actions/Direction

By the year 2000, reduce particulate matter emissions and impacts from prescribed burning by 50 percent from the baseline period (1976-1979). This will be accomplished by planning, conducting, monitoring, and, if necessary, adjusting prescribed fire activities in accordance with the Oregon state implementation plan and the Oregon Smoke Management Plan (see Fire/Fuels Management section).

Reduce broadcast burning in favor of lower intensity under burning. Use emission reduction mitigation measures and smoke dispersal techniques to the greatest extent practical. Wildfire hazard reduction, site preparation, and the use of prescribed fire for species habitat mitigation will be implemented in a manner consistent with ecosystem management.

Consider alternative emission reduction techniques whenever they are compatible with land allocation objectives and other management actions/direction. See the Air Quality Analysis section of the SEIS for alternative treatments that may be considered during fuels management project design.

Where needed, use dust abatement measures on roads during BLM timber harvest operations or other BLM commodity hauling activity. Encourage dust abatement measures when haulers use BLM roads under permits and right-of-way agreements.

Promote burning of dry fuelwood through activities such as making available copies of Oregon Department of Environmental Quality publications to fuelwood purchasers.

Water and Soils

Objectives

See Aquatic Conservation Strategy, Riparian Reserve and Key Watershed objectives.

As directed by the Clean Water Act, comply with state water quality requirements to restore and maintain water quality to protect the recognized beneficial uses in district watersheds.

Improve and/or maintain soil productivity.

Land Use Allocations

None specifically for water quality or soils. However, Riparian Reserves, Key Watershed provisions, and Timber Production Capability Classifications will assist in meeting water quality and soils management objectives.

Management Actions/Direction — General

Improve and/or maintain soil and water conditions by closing selected areas to vehicle use and/or limiting such use to existing or designated roads and trails. See Recreation, Off-Highway Vehicle Areas, and Roads sections for additional details.

Management Actions/Direction — Water

See Management Actions/Direction for Riparian Reserves and Key Watersheds (located in Aquatic Conservation Strategy section).

Continue to implement a nonpoint source management program in cooperation with the U.S. Environmental Protection Agency and the Oregon Department of Environmental Quality.

Continue coordination with the Oregon Department of Environmental Quality for implementation of best management practices which protect beneficial uses of water.

Ensure consistency of management activities with the *Oregon Water Management Program* for forest practices and with Oregon's water quality criteria and guidelines (Oregon Administrative Rule 340-41).

Protect flood plains and wetlands in accordance with Executive Orders 11988 and 11990 and the *Riparian-Wetlands Initiative for the 1990s.* Design and implement watershed restoration projects that promote long-term ecological integrity of ecosystems, conserve the genetic integrity of native species, and attain Aquatic Conservation Strategy objectives. See Aquatic Conservation Strategy for additional guidance.

Cooperate with federal, state, local, and tribal agencies and private landowners to develop watershed-based coordinated resource management plans or other cooperative agreements to meet Aquatic Conservation Strategy objectives.

Prevent watershed degradation rather than using mitigation or planned restoration to correct foreseeable problems caused by management activities. See best management practices in appendix C for additional guidance.

Identify and attempt to obtain instream flows needed to maintain riparian resources, channel conditions, aquatic habitat, and water quality.

Locate water drafting sites to minimize adverse effects on stream channel stability, sedimentation, and instream flows needed to maintain riparian resources, channel conditions and fish habitat.

Apply herbicides, insecticides, and other chemicals in a manner that avoids impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

Use land acquisition, exchange, and conservation easements to meet Aquatic Conservation Strategy objectives.

Apply for water rights to support the needs for fire suppression, construction/maintenance (e.g., pump chances, water holes, and reservoirs) and other programs as appropriate.

Management Actions/Direction — Soils

Apply best management practices during all ground- and vegetation-disturbing activities. See appendix C for a list of practices.

Minimize disturbance of identified fragile sites. Appendix C includes a summary of management guidance for fragile sites.

When aerial or cable systems are used, suspend one or both ends of logs above the ground for all or part of their length during most of the yarding operation.

In timber sale areas involving ground yarding systems, use existing skid trails as much as possible. As a general rule, limit new skid trails to

Management Actions/Direction, continued

slopes less than 35 percent and limit tractor operation on skid trails to periods of low soil moisture content when resistance to soil compaction is greater. Require operators to minimize the extent of soil displacement during logging. At the time of regeneration harvest, till compacted areas with a properly designed, self-drafting winged subsoiler. For entries other than regeneration harvest, consider tilling skid trails with the same equipment where it can be done with minimum damage to roots of reserve trees.

During site preparation, avoid using prescribed fire on soils recognized as unusually erodible, nutrient deficient, or low in organic matter. On other soils, design prescriptions to protect beneficial soil properties (e.g., prescribed fires of low and moderate intensity). As a general rule, conduct burning operations when large fuels are moist and small fuels are dry.

Use the following guidelines for mechanical site preparation:

- Minimize piling of large woody material;
- Avoid displacing duff layers and topsoil into piles or windrows;
- Limit tractor use to one round trip over the same area; and
- Operate only when soil moisture content is below specified levels, to minimize soil compaction. Restrict track-type equipment with a brush blade to areas with suitable soil types and slopes less than 35 percent. Use low-ground pressure backhoes, loaders, grapples or other special equipment that would cause insignificant soil compaction impacts, especially on steeper slopes (30 to 45 percent) and soils susceptible to damage from compaction and topsoil displacement. Till compacted areas with approved, rear-mounted winged subsoiler equipment.

Wildlife Habitat

Objectives

See Late-Successional Reserve, Riparian Reserve and Matrix objectives.

Enhance and maintain biological diversity and ecosystem health in order to contribute to healthy wildlife populations.

Land Use Allocations

The land use allocations in this resource management plan are designed to benefit wildlife species, in the aggregate, that use the various seral stages and other habitat areas of the forest.

Management Actions/Direction — All Land Use Allocations

Use the watershed analysis process to address wildlife habitat issues for individual watersheds. The analysis will help to resolve any concerns identified in applying management actions/direction in this section and those in the Special Status and SEIS Special Attention Species and Habitat section. Where appropriate, wildlife habitat enhancement opportunities will be identified through this process. Types of enhancement opportunities include providing downed wood, gating and/or obliterating roads, seeding elk forage, creating permanent elk forage areas, creating snags, and restoring wetlands.

Coordinate with the Oregon Department of Fish and Wildlife during planning and implementation of wildlife habitat enhancement projects.

Cooperate with federal, tribal and state wildlife management agencies to identify and eliminate impacts associated with habitat manipulation, poaching, and other activities that threaten the continued existence and distribution of native wildlife inhabiting federal lands.

Management Actions/Direction — Riparian Reserves

Design and implement wildlife habitat restoration and enhancement activities in a manner that contributes to attainment of Aquatic Conservation Strategy objectives.

Design, construct and operate wildlife interpretive and other user-enhancement facilities, such as interpretive trails, in a manner that does not retard or prevent attainment of Aquatic Conservation Strategy objectives. For existing wildlife interpretative and other user-enhancement facilities inside

Riparian Reserves, ensure that Aquatic Conservation Strategy objectives are met. Where Aquatic Conservation Strategy objectives cannot be met, relocate or close such facilities.

Cooperate with federal, tribal, and state wildlife management agencies to identify and eliminate wild ungulate impacts that are inconsistent with attainment of Aquatic Conservation Strategy objectives.

Management Actions/Direction — Late-Successional Reserves

Design projects to improve conditions for wildlife if they provide late-successional habitat benefits or if their effect on late-successional associated species is negligible.

If introduction of a nonnative species is proposed, complete an assessment of impacts and avoid any introduction that would retard or prevent achievement of Late-Successional Reserve objectives.

Evaluate impacts of nonnative species existing within Late-Successional Reserves.

Develop plans and recommendations for eliminating or controlling nonnative species which are inconsistent with Late-Successional Reserve objectives. Include an analysis of effects of implementing such programs on other species within Late-Successional Reserves.

Management Actions/Direction — Matrix

(General Forest Management Area and Connectivity/Diversity Blocks)

Retain snags within a timber harvest unit at levels sufficient to support species of cavity-nesting birds at 40 percent of potential population levels. Meet the 40 percent minimum throughout the Matrix with per acre requirements met on average areas no larger than 40 acres.

Management Actions/Direction — General Forest Management Area

Retain late-successional forest patches in landscape areas where little late-successional forest persists. This management action/direction will be applied in fifth field watersheds (20 to 200 square miles) in which federal forest lands are currently comprised of 15 percent or less late-successional forest. (The assessment of 15 percent will include all federal land allocations in a watershed.) Within such an area, protect all remaining late-successional forest stands. Protection of these stands could be modified in the future when other portions of a watershed have recovered to the point where they could replace the ecological roles of these stands.

Retain six to eight green conifer trees per acre after regeneration harvest. Retained trees will be distributed in variable patterns (e.g., single trees, clumps and strips) to contribute to stand diversity.

In addition to the previous green tree retention management action/direction, retain green trees for snag recruitment in harvest units where there is an identified, near-term (less than three decades) snag deficit. These trees do not count toward green-tree retention requirements.

In a cutting area, leave a minimum of 240 linear feet of logs per acre, averaged over the area and reflecting the species mix of the original stand. All logs will be at least 20 inches in diameter at the large end, and be at least 20 feet in length. Logs will be distributed throughout a cutting area, and not piled or concentrated in a few areas. Existing decay class 1 and 2 logs count toward this requirement. Where this management action/direction cannot be met with existing coarse woody debris, merchantable material will be used to make up the deficit.

Management Actions/Direction — Connectivity/Diversity Blocks

Provide Connectivity/Diversity Blocks spaced throughout the BLM land base. Manage the blocks as follows:

Management Actions/Direction, continued

- Maintain 25 to 30 percent of each block in late-successional forest at any point in time. The percentage of habitat will include habitat in other allocations, such as Riparian Reserves. Blocks may be comprised of contiguous or noncontiguous BLM-administered lands. The size and arrangement of habitat within a block should provide effective habitat to the extent possible.
- Retain 12 to 18 green conifer trees per acre when an area is regeneration harvested. Distribute the retained trees in variable patterns (e.g., single trees, clumps and strips) to contribute to stand diversity. The management goal for the retained trees and subsequent density management is recovery of old-growth characteristics in approximately 100 to 120 years.
- In a cutting area, leave a minimum of 240 linear feet of logs per acre, averaged over the area and reflecting the species mix of the original stand. All logs will be at least 20 inches in diameter at the large end, and be at least 20 feet in length. Logs will be distributed throughout a cutting area, and not piled or concentrated in a few areas. Existing decay class 1 and 2 logs count toward this requirement. Where this management action/direction cannot be met with existing coarse woody debris, merchantable material will be used to make up the deficit.

Management Actions/Direction — Special Habitats

Using interdisciplinary teams, identify special habitat areas and determine relevant values for protection or management on a case-by-case basis. Of particular importance in these determinations will be the habitat of species for which the SEIS record of decision provides protection buffers or other site-specific management actions/direction.

Use management practices, including fire, to obtain desired vegetation conditions in special habitats.

Management Actions/Direction — Owls, Other Raptors, and Great Blue Herons

Maintain the integrity of nest sites, centers of activity, or rookeries.

Control human activities, which may disturb or interfere with nesting, within one-quarter mile of active nesting areas from March 1 to August 1.

Install nesting platforms, nest boxes, and other structures to enhance habitat.

Management Actions/Direction — Roosevelt Elk

In areas with elk habitat, close and rehabilitate roads unneeded for continued resource management or use. A general target for roads open to motorized use is 1.5 miles or less per square mile. Avoid constructing roads in areas with high elk value such as breeding sites.

Through watershed analyses, address public vehicle use of elk habitat areas. The following areas will be given priority for analysis:

Alsea Falls vicinity (700 acres)
Bummer Ridge (2,100 acres)
Clarence Creek area (300 acres)
Dead Horse Canyon (1,600 acres)
East Creek (800 acres)
Elk Creek/Bear Creek area (2,200 acres)
Fall Creek (2,600 acres)
Fan Creek (1,000 acres)
Green Peter Peninsula area (1,900 acres)
Homestead Road area (1,700 acres)
Little North Fork Wilson River area (500 acres)
North Fork Siletz River area (6,400 acres)
Skunk Creek (700 acres)
Tillamook Ridge (700 acres)

Keep major game trails clear of slash accumulations caused by thinning projects.

Conduct forage seeding in habitat areas (200 to 500 acres per year) with appropriate seed beds and where compatible with other management objectives.

Management Actions/Direction — Golden Eagles

Protect 30 acres around known nest sites. Protection measures will include no habitat removal and no human disturbance from March 1 to August 15.

Fish Habitat

Objectives

See Aquatic Conservation Strategy objectives.

Maintain or enhance the fisheries potential of streams and other waters consistent with BLM's *Fish and Wildlife 2000 Plan*, the *Bring Back the Natives* initiative, and other nationwide initiatives.

Promote the rehabilitation and protection of at-risk fish stocks and their habitat.

Land Use Allocations

There are no specific land use allocations for the fisheries resource. However, Riparian Reserves, Key Watershed provisions, and Timber Production Capability Classifications will assist in meeting fish habitat management objectives.

Management Actions/Direction — Riparian Reserves

Design and implement fish habitat restoration and enhancement activities in a manner that contributes to attainment of Aquatic Conservation Strategy objectives.

Design, construct and operate fish interpretive and other user-enhancement facilities, such as trails, in a manner that does not retard or prevent attainment of Aquatic Conservation Strategy objectives. For existing fish interpretative and other user-enhancement facilities inside Riparian Reserves, ensure that Aquatic Conservation Strategy objectives are met. Where Aquatic Conservation Strategy objectives cannot be met, relocate or close such facilities.

Cooperate with federal, tribal and state fish management agencies to identify and eliminate impacts associated with habitat manipulation, fish stocking, harvest and poaching that threaten the continued existence and distribution of native fish stocks inhabiting federal lands.

Cooperate with federal, tribal, and state wildlife management agencies to identify and eliminate wild ungulate impacts that are inconsistent with attainment of Aquatic Conservation Strategy objectives.

Identify instream flows needed to maintain riparian resources, channel conditions, and fish passage.

Management Actions/Direction — Late-Successional Reserves

Design projects to improve conditions for fish if they provide late-successional habitat benefits or if their effect on late-successional associated species is negligible.

Management Actions/Direction — All Land Use Allocations

Apply the management actions/direction in the Special Status and SEIS Special Attention Species and Habitat section.

Use the watershed analysis process to address at-risk fish species and stocks and their habitat for individual watersheds. Where appropriate, fish habitat enhancement opportunities will be identified through this process.

Coordinate with the Oregon Department of Fish and Wildlife Wild Fish Policy during planning and implementation of fish habitat enhancement projects. Priority will be given to watersheds supporting at-risk fish species and stocks and those requiring extensive restoration.

As identified through watershed analysis, rehabilitate streams and other waters to enhance natural populations of anadromous and resident fish. Rehabilitation measures may include, but not be limited to:

- fish passage improvements;
- instream structures using boulders and log placement to create spawning and rearing habitat;

Management Actions/Direction, continued

- placement of fine and coarse materials for overwintering habitat; and
- establishment or release of riparian coniferous trees.

Possible fish enhancement project areas include the following:

Alsea-Cove Creek
Alsea-Crooked Creek
Alsea-East Fork Lobster Creek
Alsea-Mill Creek
Alsea-North Fork Sulman Creek
Alsea-Schoolhouse Creek
Alsea-Skunk Creek
Alsea-South Fork Alsea River
Alsea-Tobe Creek
Clackamas-Deep Creek
Clackamas-Mosier Creek
Clackamas-North Fork Eagle Creek
East Fork Nehalem
Kilchis-Clear Creek
Lower Columbia-Scappoose Creek
Molalla-Camp Creek
Molalla-Canyon Creek
Molalla-Lukens Creek
Molalla-Molalla River (lower mainstem)
Molalla-Molalla River (above Table Rock Fork)
Molalla-Table Rock Fork
Nestucca-Bear Creek
Nestucca-Testament Creek
Sandy-Alder Creek
Sandy-Boulder Creek
Sandy-Gordon Creek
Sandy-Salmon River (Wildwood beaver ponds)
Santiam-Crabtree Creek
Santiam-Little North Santiam River
Santiam-Sinker Creek
Siletz-Boulder Creek
Siletz-Fowler Creek/Smith Creek
Siletz-North Fork Siletz River
Siletz-Rodger Creek
Trask-Elkhorn/Cruiser Creek
Trask-Middle Fork Trask River
Trask-North Fork Trask River
Tualatin-McKay, East Fork Dairy Creeks
Wilson-Little North Fork Wilson River
Yamhill-Coast Creek
Yamhill-Willamina Creek
Yaquina-Feagles Creek

See the Special Status and SEIS Special Attention Species and Habitat section and Best Management Practices (appendix C) for additional fish habitat management actions/direction and conservation practices.

Special Status and SEIS Special Attention Species and Habitat

Objectives

See Late-Successional Reserve, Riparian Reserve, Matrix and Special Area objectives.

Protect, manage and conserve federally listed and proposed species and their habitats to achieve their recovery in compliance with the Endangered Species Act, approved recovery plans, and BLM special status species policies.

Manage for the conservation of federal candidate and bureau sensitive species and their habitats so as not to contribute to the need to list and to recover the species.

Manage for the conservation of state-listed species and their habitats to assist the state in achieving management objectives.

Protect and manage assessment species and their habitats where possible so as to not elevate their status to any higher level of concern.

Protect SEIS special attention species and their habitats so as not to elevate their status to any higher level of concern.

Study, maintain or restore community structure, species composition, and ecological processes of special status plant and animal habitat.

Land Use Allocations

All of the major land allocations in this plan are designed in part to benefit special status and SEIS special attention species in the aggregate.

Management Actions/Direction — Late-Successional Reserves

In the Northern Coast Range Adaptive Management Area, manage the following areas (mapped by the Scientific Panel on Late-Successional Forest Ecosystems) as Late-Successional Reserves:

- Late-Successional/Old Growth 1 and 2 areas within marbled murrelet zone 1; and
- certain owl additions.

Design projects for recovery of threatened or endangered animal and plant species even if they result in some reduction of habitat quality for late-successional species. These projects will be designed for least impact to late-successional species.

Management Actions/Direction — All Land Use Allocations

Special Status Species (see appendix B-1 for a list of species known or suspected to occur in the planning area)

Review all proposed actions to determine whether or not special status species occupy or use affected areas or if habitat for such species is affected.

Conduct field surveys according to protocols and other established procedures. This includes surveying during the proper season unless surveys are deemed unnecessary through watershed analysis, project planning, and environmental assessment. For example, field surveys may not be conducted in all cases depending on the number and timing of previous surveys conducted, whether previous surveys looked for all species that a new survey would, and the likelihood of potential habitat. The intensity of field surveys will also vary depending on the same factors.

Consult/conference with the U.S. Fish and Wildlife Service or National Marine Fisheries Service for any proposed action which may affect federally listed or proposed species or their habitat. Based on the results of consultation/conferencing, modify, relocate, or abandon the proposed action. Request technical assistance from one of these agencies for any proposed action which may effect federal candidate species or their habitat.

Coordinate with the U.S. Fish and Wildlife Service or National Marine Fisheries Service, and other appropriate agencies and organizations and jointly endeavor to recover federally listed and proposed plant and animal species and their habitats.

Modify, relocate, or abandon a proposed action to avoid contributing to the need to list federal candidate species, state-listed species, bureau sensitive species, or their habitats.

Coordinate and cooperate with the state of Oregon to conserve state-listed species.

Identify impacts of proposed actions, if any, to bureau sensitive and assessment species and clearly describe impacts in environmental analyses. As funding permits and as species conservation dictates, bureau sensitive and assessment species will be actively managed.

Retain under federal management, or other appropriate management organization, habitat essential for the survival or recovery of listed and proposed species. Retain habitat of proposed, candidate, or bureau sensitive species where disposal would contribute to the need to list the species.

Where appropriate opportunities exist, acquire land to contribute to recovery, reduce the need to list, or enhance special status species habitat.

Coordinate with other agencies and groups in management of species across landscapes. Coordination will be accomplished through conservation plans or similar agreements which identify actions to conserve single or multiple species and/or habitats. Such strategies could preclude the need for intensive inventories or modifications to some projects where the conservation plan provides adequate protection for the species and meets the intent of policy.

Where plans exist for species no longer on the special status list, continue with the prescribed conservation actions if determined to be required to avoid relisting or future consideration for listing. In the case of interagency plans or agreements, this determination will be mutually decided. Such plans may be modified as needed based on adequacy of existing range-wide conditions and conservation management.

Management Actions/Direction, continued

Where appropriate, pursue opportunities to increase the number of populations of species under BLM management through land acquisition and/or species reintroduction in coordination with other responsible agencies.

Pursue opportunities for public education about conservation of species.

Management Actions/Direction — All Land Use Allocations

SEIS Special Attention Species

This incorporates the "Survey and Manage" and "Protection Buffer" species and standards and guidelines from the SEIS record of decision.

Survey and Manage

Implement the survey and manage provision of the SEIS record of decision within the range of SEIS special attention species and the particular habitats that they are known to occupy. Appendix B-1 shows which species are covered by this provision, and which of the following four categories and management actions/direction are to be applied to each:

1. Manage known sites (highest priority).
   - Acquire and manage information on known sites, make it available to all project planners, and use it to design or modify activities.
   - Protect known sites. For some species, apply specific management treatments such as prescribed fire.
   - For rare and endemic fungus species, temporarily withdraw 160 acres around known sites from ground-disturbing activities until the sites can be thoroughly surveyed and site-specific measures prescribed.
   - Establish management areas of all usable habitat up to 600 acres around two currently unprotected locations of *Oxyporous nobilissimus*. Protect these populations until the sites can be thoroughly surveyed and site-specific measures prescribed. Protection will be undertaken immediately.

2. Survey prior to management activities and manage sites.
   - Continue existing efforts to survey and manage rare and sensitive species habitat.
   - For species without survey protocols, start immediately to design protocols and implement surveys.
   - Within the known or suspected ranges and within the habitat types of vegetation communities associated with the species, survey for Larch Mountain salamanders and red tree voles.

     These surveys will precede the design of all ground-disturbing activities that will be implemented in 1997 or later.
   - For the other species listed in appendix B-1, begin development of survey protocols promptly and proceed with surveys as soon as possible. These surveys will be completed prior to ground-disturbing activities that will be implemented in fiscal year 1999 or later. Work to establish habitat requirements and survey protocols may be prioritized relative to the estimated threats to the species as reflected in the SEIS.
   - Conduct surveys at a scale most appropriate to the species.
   - Develop management actions/direction to manage habitat for the species on sites where they are located.
   - Incorporate survey protocols and proposed site management in interagency conservation strategies developed as part of ongoing planning efforts coordinated by the Regional Ecosystem Office.

3. Conduct extensive surveys and manage sites.
   - Conduct extensive surveys for the species to find high-priority sites for species management. Specific surveys prior to ground-disturbing activities are not a requirement.
   - Conduct surveys according to a schedule that is most efficient and identify sites for protection at that time.
   - Design these surveys for efficiency and develop standardized protocols.
   - Begin these surveys by 1996.

4. Conduct general regional surveys.
   - Survey to acquire additional information and to determine necessary levels of protection for arthropods, fungi species that were not classed as rare and endemic, bryophytes, and lichens.
   - Initiate these surveys no later than fiscal year 1996 and complete them within ten years.

Protection Buffers

Provide protection buffers for specific rare and locally endemic species and SEIS special attention species in the upland forest matrix and all habitats identified in the SEIS record of decision. (Species occurring in the district are listed below.) These species are likely to be assured viability if they occur within reserves. However, there might be occupied locations outside reserves that will be important to protect as well.

Apply the following management actions/direction:

- Develop survey protocols that will ensure a high likelihood of locating sites occupied by these species.
- Following development of survey protocols and prior to ground-disturbing activities, conduct surveys within the known or suspected ranges of the species and within the habitat types or vegetation communities occupied by the species. See the previous Survey and Manage section for an implementation schedule.
- Manage known habitat of special attention species requiring protection buffers as follows:

Nonvascular plants

Buxbaumia piperi

- Maintain decay class 3, 4, and 5 logs and greater than 70 percent closed-canopy forest habitats for shade.
- Restrict shelterwood and thinning prescriptions for timber harvest.

Sarcosoma mexicana

- Protect deep litter layers in older forest where found.
- Defer prescribed burning of understory or other activities which would not retain a deep litter layer.

Amphibians

Larch Mountain Salamander

- Avoid any ground-disturbing activity that would disrupt the talus layer where this species occurs.
- Maintain 40 percent canopy closure of trees within the site and within a buffer of at least the height of one site potential tree or 100 feet horizontal distance, whichever is greater, surrounding the site.
- Consider larger buffer widths on steep slopes above protected sites.
- Conduct partial harvest if canopy closure can be retained. In such cases, logging will be conducted using helicopters or high-lead cable systems to avoid disturbance of the talus layer.
- The implementation schedule for this species is the same as for survey and manage components one and two.

Birds

Black-backed Woodpecker (high elevations in the Cascade Range)

- Avoid cutting of snags over 20 inches diameter at breast height (dbh).
- Provide for 100 percent population potential which is equivalent to 0.12 conifer snags per acre in forested habitats. Snags must be at least 17 inches dbh (or largest available if 17 inch dbh snags are unavailable) and in hard decay stages.

Great Gray Owl (high elevations in the Cascade Range)

- Provide a no-harvest buffer of 300 feet around meadows and natural openings and establish one-quarter mile protection zones around known nest sites.
- Within one year, develop and implement a standardized protocol for surveys and survey for nest locations using the protocol.
- Protect all future discovered nest sites as previously described.
- For newly discovered habitat of other special attention species requiring protection buffers, apply the management actions/direction in the SEIS record of decision.

Management Actions/Direction — All Land Use Allocations

Animals

Roosting Bats

Conduct surveys to determine the presence of roosting bats, including fringed myotis, silver-haired bats, long-eared myotis, long-legged myotis, and pallid bats. Surveys will be conducted according to protocol defined in the SEIS record of decision and in any subsequent revisions to the protocol.

As an interim measure, allow no timber harvest within 250 feet of sites containing bats. Develop

Management Actions/Direction, continued

mitigation measures in project or activity plans involving these sites. The intent of these measures is to protect sites from destruction, vandalism, disturbance from road construction or blasting, or any other activity that could change cave or mine temperatures or drainage patterns.

When Townsend's big-eared bats are found on federal land, notify the Oregon Department of Fish and Wildlife. Develop management prescriptions for these sites that include special consideration for potential impacts on this species.

Listed and Proposed Threatened and Endangered Species

General

Implement the land use allocations and management actions/direction of this resource management plan which are designed to enhance and maintain habitat for threatened and endangered species.

Northern Spotted Owl
(federal threatened species)

In the Matrix and the Northern Coast Range Adaptive Management Area, retain 100 acres of the best northern spotted owl habitat as close as possible to a nest site or owl activity center for all known (as of January 1, 1994) spotted owl activity centers.

Fall no trees within one-quarter mile of all active northern spotted owl nest sites from approximately March 1 to September 30 to avoid disturbance and harm to young owls.

With minor exceptions, restrict human activities that could disturb owl nesting, especially use of large power equipment, within one-quarter mile of all active spotted owl nest sites from approximately March 1 to September 30. Restrictions on activities will usually not be required for owl nests and activity centers located near roads or in other areas of permanent human activity.

Marbled Murrelet
(federal threatened species)

Conduct two years of survey prior to any human disturbance of marbled murrelet habitat.

Protect contiguous existing and recruitment habitat for marbled murrelets (i.e., stands that are capable of becoming marbled murrelet habitat within 25 years) within a one-half mile radius of any site where the birds' behavior indicates occupation (e.g., active nest, fecal ring or eggshell fragments, and birds flying below, through, into, or out of the forest canopy within or adjacent to a stand).

Neither conduct nor allow harvest of timber within occupied marbled murrelet habitat at least until completion of the Marbled Murrelet Recovery Plan.

During silvicultural treatments of nonhabitat within the one-half mile circle, protect or enhance suitable or replacement habitat.

Amend or revise management direction as appropriate when the recovery plan is completed.

Bald Eagle
(federal threatened species)

Comply with the *Pacific Bald Eagle Recovery Plan*, the working implementation plan, and existing site-specific habitat management plans.

Protect the following known and potential nest sites and communal roosting areas identified in the bald eagle recovery implementation plan: Elk Creek, Green Peter Peninsula, Kilchis River, North Santiam, North Fork Siletz River, Raymond Creek, Table Mountain, and Wilson River.

Write and implement habitat management plans incorporating the BLM-responsible actions identified in the bald eagle recovery implementation plan.

Review habitat management plans periodically to determine whether modifications are needed.

Peregrine Falcon
(federal endangered species)

Comply with the *Pacific Coast Recovery Plan for the American Peregrine Falcon.*

Oregon Chub
(endangered species)

Participate in recovery efforts for the Oregon chub. If populations are found in streams administered by BLM, management actions/direction will be developed at that time under the recovery plan.

Management Actions/Direction — All Land Use Allocations

Plants

Listed and Proposed Threatened and Endangered Species

General

Implement the land use allocations and management actions/direction of this resource management plan which are designed to enhance and maintain habitat for all endangered and threatened species.

Nelson's Checkermallow
(federal threatened species)

Pending completion of a recovery plan, manage the species as follows:

- Continue special management of the proposed Walker Creek Area of Critical Environmental Concern and the seedling transplant sites at South McGuire and Neverstill. This includes all the Nelson's checkermallow populations on BLM-administered lands.
- Study and monitor population dynamics of the plant in its native prairie habitat.

Comply with the recovery plan for the species when it is completed.

Special Areas

Objectives

Retain existing research natural areas and existing areas of critical environmental concern that meet the test of continuing need for designation. Retain other special areas. Provide new special areas where needed to maintain or protect important values.

Maintain, protect, or restore relevant and important value(s) of areas of critical environmental concern.

Preserve, protect, or restore native species composition and ecological processes of biological communities (including Oregon Natural Heritage Plan terrestrial and aquatic cells) in research natural areas. These areas will be available for short- or long-term scientific study, research and education and will serve as a baseline against which human impacts on natural systems can be measured.

Provide for recreation uses and environmental education in outstanding natural areas. Manage uses to prevent loss of outstanding values.

Provide and maintain education opportunities in environmental education areas. Control uses to minimize disturbance of educational values.

Land Use Allocations

Special Area Category	Number	Approx. Acres
Areas of Critical Environmental Concern[1]	13	4,000
Areas of Critical Environmental Concern/ Research Natural Areas	8	3,500
Areas of Critical Environmental Concern/ Outstanding Natural Areas	6	1,100
Environmental Education Areas	1	200
Other (Willamette River parcels and A.J. Dwyer Scenic Area)	2	80

[1] This category includes only areas with an area of critical environmental concern designation. Double designated areas, such as areas of critical environmental concern/ research natural areas, are not included.

See map 5 for locations and table 2 for site-specific acres.

Management Actions/Direction

Except for the Big Canyon Area of Critical Environmental Concern, manage previously designated special areas in accordance with approved management plans. (Big Canyon will be managed as a Late-Successional Reserve.) If management plans have not been prepared for previously designated areas, manage in accordance with the guidelines in table 2.

Develop site-specific management plans for new special areas as needed. Protect resource values in new areas pending completion of management plans. See table 2 for management guidelines. Management plans will address other possible actions such as land acquisition, use of prescribed fire, and interpretation.

Table 2 Management of Special Areas

Name	Acres	Off-Highway Vehicle Designation	Leasable Mineral Entry	Locatable/Salable Mineral Entry	Timber Harvest
A.J. Dwyer Scenic Area	5	Limited	Open - NSO	Closed	No
Carolyn's Crown ACEC / RNA	261	Closed	Open - NSO	Closed	No
Crabtree/Shafer Creek ACEC / RNA / ONA	961	Limited	Open - NSO	Closed	No
Elk Creek ACEC	1,577	Closed	Open - NSO	Closed	No-Primary Zone Yes-Secondary Zone[1]
Forest Peak ACEC / RNA	134	Closed	Open - NSO	Closed	No
Grass Mtn. ACEC / RNA	726	Closed	Open - NSO	Closed	No
High Pk.-Moon Cr. ACEC / RNA	1,538	Closed	Open - NSO	Closed	No
Larch Mtn. Env. Ed. Site	183	Closed	Open - NSO	Closed	No
Little Grass Mtn. ACEC / ONA	45	Closed	Open - NSO	Closed	No
Little Sink ACEC / RNA	81	Closed	Open - NSO	Closed	No
Lost Prairie ACEC	58	Closed	Open - NSO	Closed	No
Marys Peak ACEC / ONA	104	Limited	Open - NSO	Closed	No
Middle Santiam Terrace ACEC	108	Closed	Open - NSO	Closed	No
Nestucca River ACEC	1,062	Limited	Open - NSO	Closed	No
North Santiam ACEC	31	Closed	Open - NSO	Closed	No
Rickreall Ridge ACEC	177	Closed	Open - NSO	Closed	No

Table 2 Management of Special Areas (continued)

Name	Acres	Off-Highway Vehicle Designation	Leasable Mineral Entry	Locatable/Salable Mineral Entry	Timber Harvest
Saddleback Mtn. ACEC / RNA	151	Closed	Open - NSO	Closed	No
Sandy River Gorge ACEC / ONA	400	Closed	Open - NSO	Closed	No
Sheridan Peak ACEC	299	Closed	Open - NSO	Open - AR	Yes[1]
Soosap Meadows ACEC	343	Closed	Open - NSO	Closed	No
The Butte ACEC / RNA	40	Closed	Open - NSO	Closed	No
Valley-of-the-Giants ACEC / ONA	51	Closed	N / A[2]	N / A[2]	No
Walker Flat ACEC	10	Limited	Open - NSO	Closed	No
White Rock Fen ACEC	51	Closed	Open - NSO	Closed	No
Wilhoit Springs ACEC	170	Limited	Open - NSO	Closed	No
Willamette River Parcels	76	Closed	Open - NSO	Closed	No Commercial Timber
Williams Lake ACEC	98	Limited	Open - NSO	Closed	No
Yampo ACEC	13	Limited	Open - NSO	Closed	No
Yaquina Head ACEC / ONA	106	Limited	Open - NSO	Closed	No Commercial Timber

[1] Thinning in timber up to 110 years old.
[2] Mineral resources not federally administered.

ACEC = Area of Critical Environmental Concern
RNA = Research Natural Area
ONA = Outstanding Natural Area
NSO = No Surface Occupancy
AR = Additional restrictions
N / A = Not applicable

Cultural Resources
Including American Indian Values

Objectives

Identify cultural resource localities and manage them for public, scientific, and cultural heritage purposes.

Conserve and protect designated cultural resources for future generations.

Support ecosystem management by providing information on long-term environmental change and the interactions between humans and the environment in the past.

Continue to fulfill government-to-government and trust responsibilities to American Indian tribes regarding heritage and religious concerns.

Land Use Allocations

Sites with significant values will be protected to the extent possible from vandalism and management actions that would degrade these values. Cultural resource sites are not mapped in this plan or described in detail due to the sensitivity of resource values.

The Salem District manages nine cultural resource sites listed or eligible for listing in the National Register of Historic Places.

Management Actions/Direction

Evaluate cultural resource sites to determine their potential for contributing to public, cultural heritage, and/or scientific purposes.

Investigate landscape features such as bogs, ponds, and packrat middens, and cultural sites that contain information regarding long-term environmental change.

Develop methods for describing past landscapes and the role of humans in shaping those landscapes.

Address the management of cultural resources in watershed analyses and project plans.

Develop educational and interpretive programs to increase public awareness and appreciation of cultural resources and the nation's past, as part of the "Adventures in the Past" initiative.

Work with local American Indian tribes and other interested parties to develop partnerships to accomplish cultural resource objectives.

Take appropriate law enforcement or other actions when necessary to protect cultural resources. (Such actions may include physical protection measures such as riprapping and barrier installations to reduce deterioration.)

Work with federally recognized American Indian tribes to develop memoranda of understanding so that their heritage and religious concerns may be appropriately considered. These tribes include the Confederated Tribes of Grand Ronde, the Confederated Tribes of Siletz Indians, and the Confederated Tribes of Warm Springs.

Consider acquiring significant cultural resource properties for public, cultural heritage, and scientific purposes.

Visual Resources

Objectives

Manage all BLM-administered lands to meet the following visual resource quality objectives:

VRM Class I areas	– preserve the existing character of landscapes.
VRM Class II areas	– retain the existing character of landscapes.
VRM Class III areas	– partially retain the existing character of landscapes.
VRM Class IV areas	– allow major modifications of existing character of landscapes.

Emphasize management of scenic resources in selected high-use areas to retain or preserve scenic quality.

Land Use Allocations

VRM Class	Approx. BLM Acres
I	14,100
II	22,800
III	59,600
IV	301,600

See map 6 for the location of visual resource management classes.

Management Actions/Direction

Address visual resource management issues when preparing watershed analyses.

Use the visual resource contrast rating system during project-level planning to determine whether or not proposed activities will meet visual resource management objectives. Use mitigation measures to reduce visual contrasts.

Provide for natural ecological changes in visual resource management class I areas. Some very limited management activities may occur in these areas. The level of change to the characteristic landscape should be very low and will not attract attention. Changes should repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

Manage visual resource management class II lands for low levels of change to the characteristic landscape. Management activities may be seen but should not attract the attention of the casual observer. Changes should repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

Manage visual resource management class III lands for moderate levels of change to the characteristic landscape. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

Manage visual resource management class IV lands for moderate levels of change to the characteristic landscape. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the effect of these activities through careful location, minimal disturbance, and repeating the basic elements of form, line, color, and texture.

Wild and Scenic Rivers

Objectives

Manage designated segments of the National Wild and Scenic Rivers System by protecting their outstandingly remarkable values, and maintain and enhance the natural integrity of river-related values.

Protect outstandingly remarkable values identified on BLM-administered lands within the study corridors of eligible river segments studied and administratively found suitable for inclusion as components of the National Wild and Scenic Rivers System.

Provide interim protective management for outstandingly remarkable values identified on BLM-administered lands along river segments determined eligible but not studied for inclusion as components of the National Wild and Scenic Rivers System.

Manage the natural integrity of river-related values to maintain or enhance the highest tentative classification determined for rivers found eligible or studied for suitability.

Land Use Allocations

Designated River Segments

River Segment	Classification (for BLM segment)	Miles	Approx. BLM Acres
Clackamas River	Recreational	27.0	200
Quartzville Creek	Recreational	9.7	1,600
Salmon River	Recreational Scenic	6.7 11.8	500 (for both segments)
Sandy River	Recreational Scenic	16.6 3.8	500 (for both segments)

Management Actions/Direction, continued

River Segments Found Suitable for Inclusion in the National System

River Segment	Tentative Classification	Miles	Approx. BLM Acres	Percent BLM
Nestucca River (segment A)	Recreational	15.3	3,000	72
Molalla River (segment B)	Recreational	12.4	3,300	84

The corridor width for rivers found eligible or studied for suitability is generally defined as one-quarter mile on either side of the river (approximately one-half mile wide corridor). Technically these are not land use allocations at this time. If Congress passes legislation to designate them, they will be automatically added to the allocations of the resource management plan.

See map 7 for segment locations.

Management Actions/Direction

Revise the Salmon River, Sandy River, and Quartzville Creek Wild and Scenic River management plans to address attainment of Aquatic Conservation Strategy objectives. Manage these river segments according to the revised management plans.

Provide the following types of interim protection on river segments found eligible or suitable for inclusion as components of the National Wild and Scenic Rivers System:

- Eligible and/or suitable recreational rivers: exclude timber harvest in the Riparian Reserves, moderately restrict development of leasable and salable minerals, and protect a segment's free-flowing values and identified outstandingly remarkable values.
- Eligible and/or suitable scenic rivers: exclude timber harvest in the Riparian Reserves, provide visual resource management class II management in the one-half mile wide corridor, and protect a segment's free-flowing values and identified outstandingly remarkable values.
- Eligible and/or suitable wild rivers: exclude timber harvest and other disturbing activities within the one-half mile wide corridor.
- Upon completion of the record of decision for this resource management plan, release from interim protection all river segments found not suitable for inclusion as components of the national system.

Prepare a suitability study report for Elkhorn Creek. This will be done jointly with the Willamette National Forest. In the draft resource management plan, BLM found this stream not suitable for designation as a component of the national system. Based on subsequent public comment and recent Forest Service interest in studying Elkhorn Creek, the BLM will set aside the original suitability finding.

Wilderness

Objectives

Manage use of resources within Table Rock Wilderness to preserve the undisturbed natural integrity of the area.

Maintain the wilderness character of Little Sink Instant Study Area to comply with BLM's Wilderness Interim Management Policy.

Land Use Allocations

Area Name	Wilderness Status	Approx. BLM Acres
Table Rock Wilderness	Designated	5,800
	Proposed Addition	350
Little Sink	Instant Study Area	80

See map 7 for the location of these areas.

Management Actions/Direction

Revise the Table Rock Wilderness management plan to address attainment of Aquatic Conservation Strategy objectives. Manage the wilderness in accordance with the revised plan.

Recommend to Congress that 350 acres of BLM-administered lands contiguous to the existing Table

Rock Wilderness be designated a part of the wilderness to create a more logical and manageable boundary.

Complete rehabilitation projects within the proposed Table Rock Wilderness addition to restore native vegetation and create more natural appearing landscapes.

Follow interim management guidelines for the Little Sink Instant Study Area until a decision is made by Congress. Authorize no action that would diminish the suitability of the area as wilderness. Take appropriate actions following congressional decision.

Rural Interface Areas

Objectives

Consider the interests of adjacent and nearby rural land owners, including residents, during analysis, planning and monitoring related to managed rural interface areas. These interests include personal health and safety, improvements to property, and quality of life. Determine how land owners might be or are affected by activities on BLM-administered lands.

Land Use Allocations

Mapped rural interface areas encompass approximately 36,380 acres of BLM-administered lands within one-half mile of private lands zoned for 1 to 20 acre lots (see map 8 for locations and table 3 for acres by township and range). Areas zoned for 40-acre and larger lots with homes adjacent to or near BLM-administered lands are also considered rural interface areas. They are not mapped in the Western Oregon Digital Data Base.

Management Actions/Direction

Work with local governments to:

- improve the BLM data base regarding private land planning/zoning designations and residential development near BLM-administered lands;
- provide information to local planners regarding BLM land allocations in rural interface areas and the management objectives and guidelines for these lands;
- develop design features and mitigation measures that will minimize the possibility of conflicts between private and federal land management; and
- monitor the effectiveness of design features and mitigation measures in rural interface areas.

As a part of watershed analysis and project planning, work with local individuals and groups, including fire protection districts, to identify and address concerns related to possible impacts of proposed management activities on rural interface areas.

Use design features and mitigation measures to avoid or minimize impacts to health, life and property, and quality of life. Examples include different harvest regimes, hand application rather than aerial application of herbicides and pesticides, and hand piling of slash for burning rather than broadcast burning. Monitor the effectiveness of design features and mitigation measures.

Eliminate or mitigate public hazards such as abandoned rock quarries.

Where needed, reduce public use of nonthrough or local roads within rural interface areas and within one-quarter mile of existing dwellings. Gates and other types of traffic barriers such as guardrails, berms, ditches, and log barricades will be used as appropriate. These actions are needed to reduce unauthorized dumping, fire risk, and vandalism to private property.

Where needed, use dust abatement measures on roads during BLM timber harvest operations or other BLM commodity hauling. Encourage and enforce dust abatement measures when haulers use BLM roads under permits and right-of-way agreements.

Where needed, reduce fuel hazards on BLM-administered lands in rural interface areas.

Table 3 Managed Rural Interface Areas

Rural Interface Area		BLM Acres	Rural Interface Area		BLM Acres
T. 2 N.	R. 2 W.	312	T. 5 S.	R. 2 E.	33
T. 3 N.	R. 2 W.	297	T. 5 S.	R. 3 E.	53
T. 4 N.	R. 2 W.	79	T. 5 S.	R. 6 W.	32
T. 4 N.	R. 3 W.	100	T. 5 S.	R. 7 W.	818
T. 1 S.	R. 4 E.	247	T. 6 S.	R. 1 E.	153
T. 1 S.	R. 5 E.	101	T. 6 S.	R. 2 E.	1,109
T. 1 S.	R. 4 W.	8	T. 6 S.	R. 7 W.	175
T. 1 S.	R. 5 W.	108	T. 6 S.	R. 10 W.	2
T. 1 S.	R. 7 W.	35	T. 8 S.	R. 4 E.	3
T. 1 S.	R. 8 W.	785	T. 9 S.	R. 1 E.	32
T. 1 S.	R. 9 W.	129	T. 9 S.	R. 2 E.	642
T. 2 S.	R. 4 E.	303	T. 9 S.	R. 3 E.	558
T. 2 S.	R. 5 E.	168	T. 9 S.	R. 10 W.	16
T. 2 S.	R. 6 E.	998	T. 9 S.	R. 11 W.	39
T. 2 S.	R. 7 E.	5	T. 10 S.	R. 1 E.	1,227
T. 2 S.	R. 3 W.	80	T. 10 S.	R. 2 E.	337
T. 2 S.	R. 5 W.	260	T. 10 S.	R. 3 E.	128
T. 3 S.	R. 3 E.	898	T. 10 S.	R. 1 W.	193
T. 3 S.	R. 4 E.	74	T. 10 S.	R. 10 W.	19
T. 3 S.	R. 5 E.	34	T. 11 S.	R. 1 E.	507
T. 3 S.	R. 5 W.	597	T. 12 S.	R. 1 E.	75
T. 3 S.	R. 8 W.	25	T. 13 S.	R. 7 W.	894
T. 3 S.	R. 9 W.	159	T. 13 S.	R. 11 W.	30
T. 4 S.	R. 2 E.	162	T. 14 S.	R. 7 W.	474
T. 4 S.	R. 3 E.	454	T. 14 S.	R. 8 W.	1,810
T. 4 S.	R. 4 E.	160	T. 14 S.	R. 9 W.	238
T. 4 S.	R. 5 W.	120	T. 15 S.	R. 8 W.	935
T. 4 S.	R. 6 W.	187	T. 15 S.	R. 9 W.	76
			Total acres		17,491

Source: Western Oregon Digital Data Base.

Socioeconomic Conditions

Objectives

Contribute to local, state, national and international economies through sustainable use of BLM-managed lands and resources and use of innovative contracting and other implementation strategies.

Provide amenities (e.g., recreation facilities, protected special areas and high quality fisheries) that enhance communities as places to live, work, and visit.

Land Use Allocations

There are no specific land use allocations related to socioeconomic conditions. However, allocations such as the General Forest Management Area and Adaptive Management Area can assist in meeting socioeconomic objectives.

Management Actions/Direction

Support and assist the state of Oregon Economic Development Department's efforts to help rural, resource-based communities develop and implement alternative economic strategies as a partial substitute for declining timber-based economies. Support and assistance could include:

- **increased coordination with state and local governments and citizens to prioritize BLM management and development activities;**
- **increased emphasis on management of special forest products; and**
- **recreation development and other activities identified by BLM and the involved communities as benefiting identified economic strategies.**

Improve wildlife and fish habitat to enhance hunting and fishing opportunities and to increase the economic returns generated by these activities.

Improve viewing opportunities for watchable wildlife at Yaquina Head Outstanding Natural Area, the Nestucca River, and Green Peter Reservoir.

Plan and design forest management activities to produce a sustained yield of products to support local and regional economic activity. A diversity of forest products (timber and nontimber) will be offered to support large and small commercial operations and provide for personal use.

Recreation

Objectives

Provide a wide range of developed and dispersed recreation opportunities that contribute to meeting projected recreation demand within the planning area.

Manage scenic, natural, and cultural resources to enhance visitor recreation experiences and satisfy public land users.

Support locally sponsored tourism initiatives and community economic strategies by providing recreation projects and programs with both short- and long-term benefits.

Manage off-highway vehicle use on BLM-administered lands to protect natural resources, promote visitor safety, and minimize conflicts among various users.

Enhance recreation opportunities provided by existing and proposed watchable wildlife areas and national back country byways.

Continue to provide nonmotorized recreation opportunities (hiking, biking, etc.) and create additional opportunities where consistent with other management objectives.

Manage special and extensive recreation management areas in a manner consistent with *BLM Recreation 2000: A Strategic Plan* and Oregon-Washington public lands recreation initiative.

Land Use Allocations

Recreation Management Category	Number	Approx. BLM Acres	Approx. BLM Miles
Recreation Sites			
Existing	12	800	
Proposed	10	300	
Recreation Trails			
Existing	8		47
Proposed	11		131
Special Recreation Management Areas			
Existing	4	1,800[1]	
Proposed	7	70,800	
Extensive Recreation Management Areas			
Existing	5	321,300	
Proposed	0		
Off-Highway Vehicle Use Areas			
Open	—	129,900	
Limited	—	229,200	
Closed	—	39,000	
Back Country Byways			
Existing	2		22
Proposed	1		15

[1] Special recreation management area boundary reduced to coincide with the special area boundary.

See map 9 for locations and the following management actions/direction section for lists of existing and proposed recreation sites, areas, trails, and back country byways. Areas designated for off-highway vehicle use are not mapped in this resource management plan. They will be mapped in subsequent planning documents.

Management Actions/Direction — Riparian Reserves

Design new recreational facilities within Riparian Reserves, including trails and dispersed sites, so as not to prevent meeting Aquatic Conservation Strategy objectives. Construction of these facilities should not prevent future attainment of these objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impacts to ensure that they do not prevent, and to the extent practicable contribute to, attainment of Aquatic Conservation Strategy objectives.

Adjust dispersed and developed recreation practices that retard or prevent attainment of Aquatic Conservation Strategy objectives. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice or occupancy.

Management Actions/Direction — Late-Successional Reserves

Retain and maintain existing recreation developments consistent with other management actions/direction for Late-Successional Reserves.

Use adjustment measures, such as education, use limitations, traffic control devices, or increased maintenance, when dispersed or developed recreation practices retard or prevent attainment of Late-Successional Reserve objectives.

Neither construct nor authorize new facilities that may adversely affect Late-Successional Reserves.

Review on a case-by-case basis new recreation development proposals. They may be approved when adverse effects can be minimized and mitigated.

Locate new recreation developments to avoid degradation of habitat and adverse effects on identified late-successional species.

Remove hazard trees along trails and in developed recreation areas.

Management Actions/Direction — All Land Use Allocations

General

Enhance travel and recreation management through increased emphasis on interpretive and informational signs and maps. Identify on informational handouts at field locations all major travel routes within the planning area. Prepare a travel

map for public distribution. These actions will support state and local strategies to encourage tourism.

Manage recreation areas to minimize disturbance to a number of fungus and lichen species known to occur within these areas. Follow survey and manage actions/direction as stated in the introduction to Land Use Allocations and Resource Programs.

In addition to the guidelines for Late-Successional Reserves and Riparian Reserves, manage recreation resources in accordance with the following guidelines:

Developed Recreation Sites and Trails

Continue to operate and maintain 12 developed recreation sites and 8 developed trails. These sites and trails are:

Sites	Trails
Alder Glen	Baty Butte/Silver King
Alsea Falls	Boulder Ridge
Canyon Creek	Eagle Creek
Dogwood	McIntyre Ridge
Dovre	Nasty Rock
Elk Bend	Table Rock
Elkhorn Valley	Tillamook Off-Highway Vehicle
Fan Creek	Valley-of-the-Giants
Fishermen's Bend	
Missouri Bend	
Wildwood	
Yellowbottom	

Designate developed recreation sites as fire suppression areas and fire fuels management areas. These designations will reduce fire hazards and protect investments. Restrictions on fire suppression equipment and activities will be required in some sites.

Manage timber within developed recreation sites for purposes of removing hazard trees, providing space for additional facilities and activity areas, and providing desired regeneration of the forest canopy.

Pursue mineral withdrawals for developed recreation sites.

Implement no action that will affect developed sites/areas which are under existing Recreation and Public Purposes Act leases to other agencies. When existing leases for these sites/areas expire, reevaluate their relevance, on a case-by-case basis, in light of current BLM management objectives.

Proposed Recreation Sites and Trails

Within the guidelines of watershed analyses and as funding becomes available, develop 10 proposed recreation sites and 11 proposed recreation trails. These sites and trails, grouped into high and moderate development priority categories, are:

Recreation Sites

High Development Priority

Alder Glen Expansion (Tillamook County) [1]
Mill Creek
Miner's Meadow (Linn County) [1]
Molalla River
Parker Creek

Moderate Development Priority

Bear Creek (Tillamook County) [1]
Dick's Ridge (Benton County) [1]
Quartzville Creek
Table Rock Wilderness Trailheads
Valley-of-the-Giants Trailhead

Recreation Trails

High Development Priority

Corvallis-to-the-Sea
Crabtree Mountain
[Note: named Green Peter Peninsula-Crabtree Lake trail in draft resource management plan]
Marys Peak
Nestucca River
Tillamook Off-Highway Vehicle Additions (Tillamook County)[1]

[1] Added between draft and proposed resource management plans.

Moderate Development Priority

Elk Creek (Tillamook County)[1]
Elkhorn Creek
Harry Mountain (Linn County)[1]
Little North Fork Wilson (Tillamook County)[1]
North Fork Alsea River
South Fork Alsea River

[1] Added between draft and proposed resource management plans.

To retain options for future development, harvest no timber in the proposed recreation sites. Exceptions may be made where a natural catastrophe (e.g., fire or windstorm) destroys the recreation development potential of the sites or trail locations. In these

Management Actions/Direction, continued

circumstances, salvage of dead and dying trees or removal of hazard trees may be undertaken. Trees will be removed during construction of facilities.

Pursue mineral withdrawals for proposed recreation sites when development is approved.

Special Recreation Management Areas

Through watershed analyses, address special recreation management area issues, and prioritize projects.

Prepare project plans as needed.

Within the guidelines of watershed analyses, designate and manage four existing and seven new special recreation management areas:

Existing Special Recreation Management Areas	
Fishermen's Bend	Sandy River
Nestucca River	Yaquina Head

Proposed Special Recreation Management Areas	
Little North Santiam River	Mt. Hood Corridor
Marys Peak	North Fork Siletz River
Mill Creek	Yellowstone
Molalla River/Table Rock	

Extensive Recreation Management Areas

Through watershed analyses, address extensive recreation management area issues, and prioritize projects. Prepare project plans as needed.

Back Country Byways

Continue to facilitate, manage, and promote public use of the Nestucca River and South Fork Alsea River National Back Country Byways.

Designate Quartzville Road as a new component of the National Back Country Byway system. This effort will be coordinated with Linn County, the Forest Service, and the Army Corps of Engineers.

Extend the Nestucca River Back Country Byway to include additional road miles of significance. This effort will be coordinated with Tillamook and Yamhill counties and adjacent landowners.

Off-Highway Vehicle Areas

Designate the majority of BLM-administered lands available to off-highway vehicle use. Areas to be closed or limited are outlined on the following page.

Enhance off-highway vehicle use of the following areas:

- Bald Mtn./Nestucca
- Greasy Creek/Gleason Creek
- Lacomb/Green Mtn.
- Rye Mtn./Grassy Flat
- Trask Mtn./North Yamhill River

Some possible enhancement measures include better signing; construction of parking areas with off-loading ramps and restrooms; placement of stream crossing structures; etc. Specific enhancement measures will be addressed in watershed analyses and subsequent project plans.

Off-Highway Vehicle Use Designation Categories

	Designation Categories[1]			
		Limited		
Site/Area Category	Closed	Seasonal	Existing Roads and Trails[2]	Designated Roads and Trails
Wilderness/Wilderness Study Areas	X			
Special Areas	X			X
Wild and Scenic River Segments				
Designated	X		X	X
Eligible But Not Studied	X		X	X
Suitable				X
Developed Recreation Sites				X
Developed Recreation Trails	X			X
Special Recreation Management Areas	X			X
Recreation and Public Purposes Act Leases	X		X	X
Special Status Species Habitat				X
Elk Emphasis Areas	X	X		X
Riparian Reserves			X	
Progeny Test Sites	X			

1 Site-specific resource values require varying degrees of protection; therefore, use restrictions within a particular category range from closed to limited.
2 Some may be closed if continued use prevents or retards attainment of Aquatic Conservation Strategy objectives.

Source: Salem District recreation inventory records.

Timber Resources

Objectives

Provide a sustainable supply of timber and other forest products.

Manage developing stands on available lands to promote tree survival and growth and to achieve a balance between wood volume production, quality of wood, and timber value at harvest.

Manage timber stands to reduce the risk of loss from fires, animals, insects, and diseases.

Provide for salvage harvest of timber killed or damaged by events such as wildfire, windstorms, insects, or disease, consistent with management objectives for other resources.

Land Use Allocations

Lands available for scheduled timber harvest are as follows:

Land Use Allocation	Approx. BLM Acres
Matrix	
General Forest Management Area (including visual resource management class II, rural interface, and timber production capability classification restricted)	40,600
Connectivity/Diversity Blocks	10,700
Adaptive Management Area	10,200

Management Actions/Direction — Matrix

(General Forest Management Area and Connectivity/Diversity Blocks)

General

See appendix D for a description of silvicultural practices and harvest methods.

Conduct timber harvest so as to:

- In a cutting area, leave a minimum of 240 linear feet of logs per acre, averaged over the area and reflecting the species mix of the original stand. All logs will be at least 20 inches in diameter at the large end, and be at least 20 feet in length. Logs will be distributed throughout a cutting area, and not piled or concentrated in a few areas. Existing decay class 1 and 2 logs count toward this requirement. Where this management action/direction cannot be met with existing coarse woody debris, merchantable material will be used to make up the deficit.
- Retain snags within timber harvest units at levels sufficient to support species of cavity-nesting birds at 40 percent of potential population levels. Meet the 40 percent minimum throughout the Matrix with per acre requirements met on areas averaging no larger than 40 acres.

Maintain a well distributed pattern of early, mid- and late-successional forest across the Matrix.

Apply silvicultural systems that are planned to produce, over time, forests which have desired species composition, structural characteristics, and distribution of seral or age classes.

Within the framework of watershed analyses, develop plans for the locations and specific designs of timber harvests and other silvicultural treatments.

Base silvicultural treatments and harvest designs on the functional characteristics of the ecosystem and on the characteristics of each forest stand and site. Treatments will be designed, as much as possible, to prevent the development of undesirable stand characteristics. The principles of integrated pest management and integrated vegetation management will be employed to avoid the need for direct treatments. Herbicides will be used only as a last resort to achieve management objectives.

Keep new road construction to the minimum needed for access to planned harvest units or for management of other resources.

Timber Harvest and Site Preparation

Declare an annual allowable sale quantity of 34.8 million board feet (5.7 million cubic feet).

The allowable sale quantity for the resource management plan is an estimate of annual average timber sale volume likely to be achieved from lands allocated to planned, sustainable harvest. This estimate, however, is surrounded by uncertainties. The actual timber sale levels may differ, as timber sale levels will be an effect

of overall forest management rather than a target that drives that management. Harvest of this approximate volume of timber is considered sustainable over the long term. This is based on assumptions that the available land base remains fixed, and that funding is sufficient to make planned investments in timely reforestation, plantation maintenance, thinning, genetic selection, forest fertilization, timber sale planning, related forest resource protection, and monitoring.

The allowable sale quantity represents neither a minimum level that must be met nor a maximum level that cannot be exceeded. It is an approximation because of the difficulty associated with predicting actual timber sale levels over the next decade, given the complex nature of many of the management actions/direction. It represents BLM's best assessment of the average amount of timber likely to be awarded annually in the planning area over the life of the plan, following a start-up period. The actual sustainable timber sale level attributable to the land use allocations and management direction of the resource management plan may deviate by as much as 20 percent from the identified allowable sale quantity. As inventory, watershed analysis and site-specific planning proceed in conformance with that management direction, the knowledge gained will permit refinement of the allowable sale quantity. The separable component of the allowable sale quantity attributable to lands in key watersheds carries a higher level of uncertainty, due to the greater constraints of Aquatic Conservation Strategy objectives and the requirement to prepare watershed analyses before activities can take place.

During the first several years, the annual allowable sale quantity will not likely be offered for sale. The resource management plan represents a new forest management strategy. Time will be required to develop new timber sales that conform to the resource management plan.

Plan harvest of marketable hardwood stands in the same manner as conifer stands, if the land is not otherwise constrained from timber management. Volume from projected hardwood harvest is included in the allowable sale quantity estimate.

Select logging systems based on the suitability and economic efficiency of each system for the successful implementation of the silvicultural prescription, for protection of soil and water quality, and for meeting other land use objectives.

Apply site preparation treatments as needed following timber harvest.

Planting

Ensure that harvested areas are reforested as quickly as possible. Supplement natural seeding with artificial seeding or planting of nursery-grown seedlings.

Use tree seed collected within the same seed zone and elevation band as the specific project areas. Use genetically selected seed when available (see Forest Genetics Program, appendix E).

When possible, complete reforestation within one year of harvest and site preparation, using tree species indigenous to the site.

Plant a mixture of species to ensure diversity of the new stand. Suitable species for the planning area include Douglas-fir, western hemlock, western redcedar, noble fir, western white pine, sugar pine, grand fir, and red alder.

Plant identified root disease centers with tree species resistant to the disease.

Conduct posttreatment reforestation surveys to determine the rate of seedling survival and to identify what areas should be replanted or interplanted to meet prescribed stocking levels.

Plantation Protection, Maintenance and Release

Protect tree plantations from animal damage with the following treatments, where appropriate:

- Place plastic tubing or netting over the seedlings; or put bud caps over the growing tips to reduce animal browsing or clipping damage.
- Trap mountain beavers and gophers when they threaten the survival of a plantation.
- Establish seasonal bear feeding stations at selected locations, set special hunting seasons, and on rare occasions, snare and destroy selected animals to reduce black bear damage.

Use maintenance and release treatments to manage competing vegetation in young plantations. Determine annually the number of acres requiring each of these treatments in conjunction with normal reforestation surveys.

Analyze clearcuts created by past management for stand maintenance needs. This will occur during a transition period of 15 to 20 years.

Management Actions/Direction, continued

Intensive Practices

Consider precommercial thinning of stands between 10 and 15 years old that average over 450 trees per acre. Thin to an average spacing of 12 to 16 feet. The number of trees left may vary from 170 to 300 per acre.

Consider fertilization of stands in the General Forest Management Area that have been precommercially or commercially thinned or where stand age and density are in the desired range.

Apply pruning to selected young forest stands. Prune the lower branches of the identified crop trees to a height of approximately 18 feet.

Commercially thin managed timber stands to increase timber production or to achieve other management objectives. Thin only in suitable stands where topography and road access are favorable for partial cut logging, or use aerial yarding methods.

Convert to appropriate conifer species lands where hardwood trees or brush became established following harvest of conifers.

Manage hardwood stands on sites not suitable for conifer production.

Management Actions/Direction — General Forest Management Area

Schedule regeneration harvests to assure that, over time, harvest will occur in stands at or above the age which produces maximum average annual growth over the lifetime of a timber stand. In the planning area, this culmination occurs between approximately 70 and 110 years of age. During the first decade, regeneration harvests may be scheduled in stands as young as 60 years, in order to develop a desired age class distribution across the landscape.

Retain late-successional forest patches in landscape areas where little late-successional forest persists. This management action/direction will be applied in fifth field watersheds (20 to 200 square miles) in which federal forest lands are currently comprised of 15 percent or less late-successional forest. (The assessment of 15 percent will include all federal land allocations in a watershed.) Within such an area, protect all remaining late-successional forest stands. Protection of these stands could be modified in the future when other portions of a watershed have recovered to the point where they could replace the ecological roles of these stands.

Retain six to eight green conifer trees per acre after regeneration harvest to provide a source of snag recruitment and a legacy bridging past and future forests. Retained trees will be distributed in variable patterns (e.g., single trees, clumps and strips) to contribute to stand diversity.

In addition to the previous green tree retention management action/direction, retain green trees for snag recruitment in harvest units where there is an identified, near-term (less than three decades) snag deficit. These trees do not count toward green-tree retention requirements.

Management Actions/Direction — Connectivity/Diversity Blocks

Maintain 25 to 30 percent of each block in late-successional forest at any point in time. The percentage of habitat will include habitat in other allocations, such as Riparian Reserves. Blocks may be comprised of contiguous or noncontiguous BLM-administered lands. The size and arrangement of habitat within a block should provide effective habitat to the extent possible.

Schedule regeneration harvests on a 150-year rotation. In order to make viable harvest units within blocks where operable areas are of limited size, more than one decade of harvest could be removed at any one time. Eventually each connectivity block will have a variety of age classes.

Retain 12 to 18 green conifer trees per acre when an area is regeneration harvested. Distribute the retained trees in variable patterns (e.g., single trees, clumps and strips) to contribute to stand diversity. The management goal for the retained trees and subsequent density management is recovery of old-growth conditions in approximately 100 to 120 years.

Special Forest Products

Objectives

Manage for the production and sale of special forest products when demand is present and where actions taken are consistent with primary objectives for the land use allocation.

Use the principles of ecosystem management to guide the management and harvest of special forest products.

Land Use Allocations

No land use allocations are made specifically for special forest products.

Management Actions/Direction — Riparian Reserves

Where catastrophic events result in degraded riparian conditions, allow fuelwood cutting if required to attain Aquatic Conservation Strategy objectives.

Management Actions/Direction — Late-Successional Reserves

Permit fuelwood gathering only in existing cull decks, in areas where green trees are marked by silviculturists for thinning, in areas where blowdown is blocking roads, and in recently harvested timber sale units where down material will impede scheduled post-sale activities or pose a unacceptable risk of future large scale disturbance. In all cases, these activities will comply with management actions/direction for Late-Successional Reserves.

Evaluate whether special forest product harvest activities have adverse effects on Late-Successional Reserve objectives.

Prior to selling special forest products, ensure resource sustainability and protection of other resource values such as special status plants or animal species.

Where special forest product activities are extensive, evaluate whether they have significant effects on late-successional habitat. Restrictions may be appropriate in some cases.

Management Actions/Direction — All Land Use Allocations

Allow harvest of special forest products throughout the district but apply the following area and plant species/group restrictions:

("X"s in both columns of the following chart means that harvesting in some sites/areas will be limited to seasons, amounts, etc., and harvesting in other sites/areas will not be allowed.)

Area	Limited Harvest	No Harvest
Areas of Critical Environmental Concern (not RNAs or ONAs)	X	X
Research Natural Areas		X
Outstanding Natural Areas		X
Environmental Education Areas		X
Special Habitats (cliffs, talus slopes, meadows, wetlands, etc.)	X	X
Developed Recreation Sites		X
Special Status Plant and Animal Sites	X	X
Connectivity/Diversity Blocks	X	
Late-Successional Reserves	X	
Riparian Reserves	X	
Wilderness		X
Wild and Scenic Rivers (designated and found suitable for designation)	X	
Wild and Scenic Rivers (tentative wild)		X

(Limited harvest in the following chart means harvesting will be restricted to certain seasons, amounts, sites/areas, etc.)

Species or Group	Limited Harvest	No Harvest
Special Status and SEIS Special Attention Species		X
Other Species		
Lily family *(Liliaceae)*	X	
Orchid family *(Orchidaceae)*	X	
Iris family *(Iricacidae)*	X	
Truffles	X	
Lichens	X	
Ferns	X	
Conifers (boughs)	X	
Mosses	X	
Mushrooms	X	

Management Actions/Direction, continued

Establish specific guidelines for the management of individual special forest products using interdisciplinary review as needed. Management guidelines will be based on the ecological characteristics of the special forest products species and the requirements of associated plant, animal, and fungal species. Guidelines will include provisions that minimize changes in site productivity. Monitoring of harvest activities and the effects of harvest will be part of special forest products management. Feasibility to harvest newly identified special forest products species will receive interdisciplinary review.

Promote burning of dry fuelwood by activities such as making available copies of Oregon Department of Environmental Quality publications to fuelwood purchasers.

Energy and Minerals

Objectives

Maintain exploration and development opportunities for leasable and locatable energy and mineral resources.

Provide opportunities for extraction of salable minerals by other government entities, private industry, individuals, and nonprofit organizations.

Continue to make available mineral resources on the reserved federal mineral estate.

Land Use Allocations

The amount of BLM-administered lands with potential for occurrence of energy and mineral resources and available for exploration and development is as follows:

Mineral Resources	Approx. BLM Acres
Leasable	392,200
Locatable	376,000
Salable	171,800

There are approximately 27,800 acres of private land with reserved federal mineral estate (also referred to as federal subsurface mineral estate).

Management Actions/Direction — Riparian Reserves

NOTE: The following management actions/direction differ from the standards and guidelines in the SEIS record of decision, since the standards and guidelines are not all implementable under current laws and regulations. The stronger standards and guidelines in the SEIS record of decision (appendix A-2) will be adopted at such time as changes in current laws and/or regulations authorize their implementation.

For any proposed locatable mining operation in Riparian Reserves, other than notice level (activity on less than five acres) or casual use, require the following actions by the operator consistent with 43 Code of Federal Regulations 3809:

- Prepare a Plan of Operations, including a reclamation plan and reclamation bond for all mining operations in Riparian Reserves. Such plans and bonds will address the costs of removing facilities, equipment, and materials; recontouring of disturbed areas to an approved topography; isolating and neutralizing or removing toxic or potentially toxic materials; salvaging and replacing topsoil; and revegetating to meet Aquatic Conservation Strategy objectives.
- Locate structures, support facilities, and roads outside Riparian Reserves. If no alternative to siting facilities in Riparian Reserves exists, locate in a way compatible with Aquatic Conservation Strategy objectives. Road construction will be kept to the minimum necessary for the approved mineral activity. Roads will be constructed and maintained to meet road management standards and to minimize damage to resources in Riparian Reserves. When a road is no longer required for mineral or land management activities, it will be reclaimed. In any case access roads will be constructed consistent with 43 Code of Federal Regulations 3809 and acceptable road construction standards and will minimize damage to resources in Riparian Reserves.
- Avoid locating solid and sanitary waste facilities in Riparian Reserves. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in Riparian Reserves exists, releases can be prevented, and stability can be ensured, then:

- Analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics.
- Locate and design the waste facilities using best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in Riparian Reserves.
- Reclaim waste facilities after operations to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.
- Monitor waste and waste facilities after operations to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.
- Require reclamation bonds adequate to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.

^ Where an existing operator is in noncompliance at the notice level (i.e., causing unnecessary or undue degradation), require actions similar to those stated above to meet the intent of 43 Code of Federal Regulations 3809.

For leasable minerals, prohibit surface occupancy for oil, gas, and geothermal exploration and development activities where leases do not exist. Where possible, adjust the stipulations in existing leases to eliminate impacts that retard or prevent the attainment of Aquatic Conservation Strategy objectives consistent with existing lease terms and stipulations.

Allow development of salable minerals, such as sand and gravel, within Riparian Reserves only if Aquatic Conservation Strategy objectives can be met.

Develop inspection and monitoring requirements and include such requirements in exploration and mining plans and in leases or permits consistent with existing laws and regulations. Evaluate the results of inspection and monitoring to determine if modification of plans, leases and permits is needed to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

Management Actions/Direction — Late-Successional Reserves

Assess the impacts of ongoing and proposed mining activities in Late-Successional Reserves.

Include stipulations in mineral leases and, when legally possible, require operational constraints for locatable mineral activities to minimize detrimental effects on late-successional habitat.

Management Actions/Direction — All Land Use Allocations

Leasable Minerals

See table 4 for restrictions on energy and mineral activities and appendix F for leasing stipulations.

Use standard and special stipulations for oil, gas, geothermal, and coal leases to protect fragile areas or critical resource values (see appendix F for a list of mineral restrictions by resource value). Special stipulations may include:

^ seasonal restrictions to protect resources such as critical wildlife habitat, prevent excessive erosion, etc.;

^ controlled surface use stipulations to protect valuable resources in small areas; and

^ no surface occupancy stipulations to protect valuable resources scattered over a large area while still providing an opportunity for exploration and development.

Waive special stipulations if the objective of a stipulation could be met in another way.

Provide opportunities for coal and geothermal exploration and development in areas with potential for occurrence. Coal activities are regulated under 43 Code of Federal Regulations 3400 and geothermal activities are regulated under 43 Code of Federal Regulations 3200.

Allow no leasing on lands within incorporated cities. Tracts within the planning area affected by this type of closure are located in Salem and Willamina.

Management Actions/Direction, continued

Table 4 Leasable Mineral Lease Restrictions

Restrictions	Approx. Acres
Closed – Nondiscretionary[1]	5,900
Open – No Surface Occupancy[2]	221,000
Open – With Additional Restrictions[3]	122,000
Open – With Standard Stipulations	49,200

[1] Congressionally designated areas including one wilderness area and one special area.
[2] Recreation sites, Recreation and Public Purposes Act and leases, special areas, visual resource management class I areas, corridors of designated wild, scenic and recreational rivers, corridors of rivers found suitable for designation as recreation rivers, Riparian Reserves, progeny test sites, seed orchard and forest disease research and study sites.
[3] Special recreation management areas, Late-Successional Reserves, Connectivity/Diversity Blocks, District-Designated Reserve, visual resource management class II areas, steep slopes (over 60 percent), managed rural interface areas, raptor nests, special status species and SEIS special attention species.

Source: Western Oregon Digital Data Base.

Locatable Minerals

See table 5 for restrictions on energy and mineral activities and appendix F for operating standards.

Use general requirements in 43 Code of Federal Regulations 3809 and site-specific guidelines to avoid unnecessary or undue degradation of resources on mining claims.

Allow activities exceeding casual use, but disturbing five acres or less, to proceed 15 days after a notice is filed in the Salem District Office.

Require an approved plan of operation before work can begin on projects disturbing more than five acres or special resource areas.

Require bonding of plans of operation to ensure mitigating measures are followed and reclamation of the disturbed lands is completed.

Require reclamation at the earliest feasible time for all surface-disturbing operations, whether conducted under a notice or approved plan of operations.

Table 5 Locatable Mineral Restrictions

Restrictions	Approx. Acres
Closed – Nondiscretionary[1]	5,900
Closed – Discretionary[2]	16,200
Open – With Additional Requirements[3]	326,800
Open – Standard Requirements	49,200

[1] Congressionally designated areas including one wilderness area and one special area.
[2] Special areas, designated and suitable scenic and recreational rivers, most recreation sites and areas, and Recreation and Public Purposes and Federal Land Policy and Management Act leases, and progeny test sites.
[3] Some recreation sites and areas, Late-Successional Reserves, Connectivity/Diversity Blocks, District-Designated Reserve, and Riparian Reserves.

Source: Western Oregon Digital Data Base.

Salable Minerals

See table 6 for restrictions on energy and mineral activities and appendix F for operating standards.

Address quarry development, management and reclamation needs through watershed analyses and project planning.

Emphasize long-term regional quarry use.

Develop new quarry sites in locations consistent with overall management objectives and guidelines of this resource management plan.

Continue to use rock from existing quarries for construction and maintenance of timber sale access roads and other purposes.

Make salable minerals available for other government agencies if requested, and if the action is consistent with management direction for protection of other resources.

Issue sales contracts for mineral materials which provide for reclamation of mined lands pursuant to 43 Code of Federal Regulations 3604 or 3610.

Consider mineral material permits on a case-by-case basis. Issue them at the discretion of the area manager.

Table 6 Salable Mineral Restrictions

Restrictions	Approx. Acres
Closed – Nondiscretionary[1]	5,900
Closed – Discretionary[2]	220,400
Open – With Additional Requirements[3]	122,600
Open – Standard Requirements	49,200

1 Congressionally designated areas including one wilderness area and one special area.

2 Corridors of rivers found suitable for designation as scenic or recreational, corridors of designated scenic or recreational rivers, special areas, some recreation sites, Recreation and Public Purposes and Federal Land Policy and Management Act leases, Riparian Reserves, and progeny test sites.

3 Some recreation sites and areas, Late-Successional Reserves, Connectivity/Diversity Blocks, District-Designated Reserve.

Source: Western Oregon Digital Data Base.

Issue free use permits to government agencies and nonprofit organizations pursuant to 43 Code of Federal Regulations 3620. Designate new common use areas or community pits only if the level of localized activity warrants.

Reserved Federal Mineral Estate

Allow the reserved federal mineral estate to remain open for mineral development.

Allow development of locatable and salable minerals in accordance with restrictions determined by the surface owner/administrator.

Convey mineral interest owned by the United States where the surface is, or will be, in nonfederal ownership, to the existing or proposed owner of the surface estate only after a determination is made under section 209(b) of the Federal Land Policy and Management Act.

Land Tenure Adjustment

Objectives

Make land tenure adjustments to benefit a variety of uses and values. Emphasize opportunities that conserve biological diversity or enhance timber management opportunities. As a matter of practice, Oregon and California forest lands allocated to timber management will only be exchanged for lands to be managed for multiple-use purposes.

Meet the following objectives for the three land tenure adjustment zones:

- **Zone 1:** generally, retain these lands under BLM administration.
- **Zone 2:** block up areas in zone 2 with significant resource values and exchange other lands in zone 2 to block up areas in zones 1 and 2 with significant resource values.
- **Zone 3:** retain lands with unique resource values; dispose of other lands in this zone using appropriate disposal mechanisms.

Make BLM-administered lands in zones 1, 2, and 3 available for a variety of uses as authorized by section 302 of the Federal Land Policy and Management Act, the Recreation and Public Purposes Act, and special recreation permits.

Manage newly acquired lands for the purpose for which they are acquired or consistent with the management objectives for adjacent BLM-administered lands. If lands with unique or fragile resource values are acquired, protect those values until the next plan revision.

Eliminate unauthorized use of BLM-administered lands.

Land Use Allocations

Zone	Approx. BLM Acres
1	160,200
2	228,000
3	9,900

See map 10 for location of land tenure zones and appendix G for legal descriptions of zone 3 tracts.

Management Actions/Direction — Riparian Reserves

Use land acquisition, exchange, and conservation easements to meet Aquatic Conservation Strategy objectives and facilitate restoration of fish stocks and others species at risk of extinction.

Management Actions/Direction — Late-Successional Reserves

Consider land exchanges when they will provide benefits equal to or better than current conditions.

Consider land exchanges especially to improve area, distribution, and quality (e.g., connectivity, shape, and contribution to biological diversity) of Late-Successional Reserves and where public and private lands are intermingled.

Management Actions/Direction — All Land Use Allocations

Use the land tenure adjustment criteria listed in appendix H when analyzing site-specific proposals to acquire or dispose of land.

Use the following three-zone concept to guide selection of lands for exchange, sale, transfer, or acquisition:

- **Zone 1**: Includes lands and other areas identified as having high public resource values. The natural resource values may require protection by federal law, executive order or policy. These lands may have other values or natural systems which merit long-term public ownership. They do not meet the criteria for sale under Federal Land Policy and Management Act section 203(a) and will generally be retained in public ownership.

  The primary mode of land acquisition in zone 1 will be through exchange of BLM-administered lands in zones 2 and 3. Purchases and donations will be pursued if exchange is not feasible.
- **Zone 2**: Includes lands that meet criteria for exchange because they form discontinuous ownership patterns, are relatively inefficient to manage, and may not be accessible to the general public. These BLM-administered lands may be blocked up in exchange for other lands in zones 1 or 2, transferred to other public agencies, or given some form of cooperative management. These lands will not be sold under section 203(a) unless the resource management plan is amended.
- **Zone 3**: Includes lands that are scattered and isolated with no known unique resource values. Zone 3 lands will be available for use in exchanges for inholdings in zone 1 (high priority) or zone 2 (moderate priority). They are also potentially suitable for disposal through sale under Federal Land Policy and Management Act section 203(a). This will occur only if important recreation, wildlife, watershed, threatened or endangered species habitat and/or cultural values are not identified during disposal clearance reviews and no viable exchange proposals for them can be identified. Zone 3 lands will also be available for conveyance to another federal, state or local agency, as needed to accommodate community expansion and other public purposes. Transfer to another federal agency to fulfill a specific management objective will also be permitted in zone 3.

Prior to all land tenure adjustments, consider the effect on the mineral estate. If the lands are not known to have mineral potential, then the mineral interest will normally be transferred simultaneously with the surface interest.

Consider conveying the subsurface mineral interest held by the United States to the existing or proposed owner of the surface estate.

Make exchanges to enhance public resource values and/or improve land patterns and management efficiency of private and BLM-administered lands within the planning area.

Consult with county governments prior to any exchange involving Oregon and California lands.

Minimize impact on local tax base by emphasizing exchanges rather than fee purchase.

Sell BLM-administered lands under the authority of Federal Land Policy and Management Act section 203(a), which requires that at least one of the following conditions exists before land is offered for sale:

- The tract, because of its location or other characteristics, is difficult or uneconomical to manage as part of BLM-administered lands and is not suitable for management by another federal department or agency.

- The tract was acquired for a specific purpose and is no longer required for any federal purpose.
- Disposal of the tract would serve important BLM objectives. These include but are not limited to:
  - expansion of communities and economic development, which cannot be achieved prudently or feasibly on land other than BLM-administered lands and which outweigh other public objectives; and
  - values, including, but not limited to, recreation and scenic values, which would be served by maintaining such tract in federal ownership.
- Transfer land to other public agencies where consistent with public land management policy and where improved management efficiency will result. Minor adjustments involving sales or exchanges may be made based on site-specific application of the land ownership adjustment criteria.

Acquire land through exchange if at least one of the following objectives is met:

- access to public lands and resources would be improved;
- important public values and uses would be maintained or enhanced;
- local social and economic values would be maintained or enhanced; and
- other aspects of the approved resource management plan would be implemented.

Rights-of-Way

Objectives

Continue to make BLM-administered lands available for needed rights-of-way where consistent with local comprehensive plans, Oregon statewide planning goals and rules, and the exclusion and avoidance areas identified in this resource management plan.

Ensure that all rights-of-way for hydroelectric development are consistent with the Northwest Power Planning Council guidance, which recommends prohibiting future hydroelectric development on certain rivers and streams with significant fisheries and wildlife values.

Land Use Allocations

Allocation of lands to existing rights-of-way will continue.

Rights-of-Way	Number
High voltage transmission lines	5
Communication sites	11

Locations are shown on map 11.

Subject to valid existing rights and with the exception of buried lines in rights-of-way of existing roads, exclude rights-of way in the following areas:

Exclusion Area	Approx. BLM Acres
Research Natural Areas	3,600
Wild River (eligible Elkhorn Creek segment)	800
Wilderness Area	5,800
Visual Resource Management Class I Areas	14,100

Subject to valid existing rights and with the exception of buried lines in rights-of-way of existing roads, avoid locating rights-of-way in the following areas:

Avoidance Area	Approx. BLM Acres
Recreation Sites (existing and proposed)	1,100
Special Areas (except research natural areas)	4,900
Scenic and Recreational Rivers (suitable, designated)	9,200
Visual Resource Management Class II Areas	22,800
Late-Successional Reserves	211,900
District-Designated Reserve	1,800

Future rights-of-way may be granted in avoidance areas when no feasible alternative route or designated right-of-way corridor is available.

Management Actions/Direction — Riparian Reserves

Issue rights-of-way to avoid adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives. Where legally possible, adjust existing rights-of-way to eliminate adverse effects that retard or prevent the attainment of Aquatic Conservation Strategy objectives. If adjustments are not effective and where legally possible, eliminate the activity. Priority for modifying existing

Management Actions/Direction, continued

rights-of-way will be based on the actual or potential impact and the ecological value of the riparian resources affected.

For proposed hydroelectric projects under the jurisdiction of the Federal Energy Regulatory Commission (the Commission), provide timely, written comments regarding maintenance of instream flows and habitat conditions and maintenance/restoration of riparian resources and stream channel integrity. Request the Commission to locate proposed support facilities outside of Riparian Reserves. For existing support facilities inside Riparian Reserves that are essential to proper management, provide recommendations to the Commission that ensure Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, provide recommendations to the Commission that such support facilities should be relocated. Existing support facilities that must be located in the Riparian Reserves should be located, operated, and maintained with an emphasis to eliminate adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives.

For other hydroelectric and surface water development proposals in Tier 1 Key Watersheds, require instream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage. Coordinate this process with the appropriate state agencies. For other hydroelectric and surface water development proposals in all other watersheds, give priority emphasis to instream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage. Coordinate this process with the appropriate state agencies.

Management Actions/Direction — Late-Successional Reserves

Retain and maintain existing developments, such as utility corridors and electronic sites, consistent with other management actions/direction for Late-Successional Reserves.

Neither construct nor authorize new facilities that may adversely affect Late-Successional Reserves.

Review on a case-by-case basis new development proposals. They may be approved when adverse effects can be minimized and mitigated.

Locate new developments to avoid adverse effects on identified late-successional species.

Remove hazard trees along utility rights-of-way and in other developed areas.

Management Actions/Direction — Other Land Use Allocations

Encourage location of major new rights-of-way projects in existing utility/transportation routes and other previously designated corridors.

Encourage applicants to consult the Western Regional Corridor Study in planning route locations.

Consider new locations for rights-of-way projects on a case-by-case basis. Applications may be approved where the applicant can demonstrate that use of an existing route or corridor would not be technically or economically feasible; and the proposed project would otherwise be consistent with this resource management plan and would minimize damage to the environment.

Allow expansion of communications facilities on existing communication sites.

Consider new communication sites on a case-by-case basis. Applications may be approved where the applicant can demonstrate that use of an existing, developed communication site would not be technically feasible; and the proposed facility would otherwise be consistent with this resource management plan and would minimize damage to the environment.

Access

Objectives

Acquire access to public lands to assist various programs to meet management objectives.

Land Use Allocations

None.

Management Actions/Direction

Acquire access by obtaining easements, entering into new reciprocal right-of-way agreements, or amending existing reciprocal right-of-way agreements. Condemnation for access will be pursued when necessary.

Acquire perpetual exclusive easements whenever possible to provide for public access and BLM control. Acquire nonexclusive easements, which do not provide for public access, consistent with management objectives and where no public access is needed. Acquire temporary easements only when other options are not available.

Continue to obtain access across lands of private companies or individuals who are a party (permittee) to existing reciprocal right-of-way agreements through appropriate agreements. Whenever a willing permittee is identified and it is determined there is a need for public access, negotiations could be started to provide for the acquisition of public access rights.

Emphasize acquisition for public access on major travel routes.

Withdrawals

Objectives

Protect lands with important resource values and/or significant levels of investment by withdrawing them from the operation of public land and mineral laws. Withdrawal is necessary to avoid irreparable damage that may be caused by nondiscretionary activities.

Land Use Allocations

Acres in existing withdrawals are shown in table 7. Acres of land classifications are shown in table 8.

BLM-proposed withdrawals are as follows:

Area	Approx. BLM Acres
Recreation Sites (five existing sites and ten proposed sites)	1,000
Special Recreation Management Area (Marys Peak)	2,300
Special Areas	7,300
Wild and Scenic Rivers (designated and suitable for designation)	9,100
Progeny Test Sites	700
Lands along U.S. Highway 101 (see legal description in appendix I)	200

Management Actions/Direction

See Management of Newly Acquired Lands (toward the end of this chapter).

Complete the review of existing withdrawals to determine whether continuation of the withdrawal is consistent with the statutory objectives of the programs for which the lands were dedicated and with other important programs.

Terminate unnecessary or duplicative withdrawals and continue those which still meet the intent of the withdrawal. See table 7.

Prior to any management activity on withdrawn lands returned to BLM by termination or revocation, conduct required resource surveys and complete all required planning and environmental assessment work.

Table 7 Land Withdrawals and Recommendations to Maintain or Revoke Withdrawals

Authority[1]	Location	Approx. Acres	Purpose/ Name	Segregative Effect[2]	Surface Manage. Agency[3]	Recommendation to maintain or revoke and rationale
Act of Congress (3/5/80)	T. 10 S., R. 11 W., Section 30, Lincoln County	100	Outstanding Natural Area/ Yaquina Head	A	BLM, USCG	Maintain - withdrawal is still serving its original purpose
Act of Congress (6/26/84)	T. 7 S., R. 3 and 4 E., Clackamas County	5,800	Wilderness/ Table Rock	A	BLM	Maintain - withdrawal is still serving its original purpose
ANS 58-1	T. 15 S., R. 7 W., Section 7, Benton County	110	Air navigation/ Prairie Mtn.	B	FAA	Revoke 40 acres - not needed for air navigation; maintain 70 acres - serving orig. purpose
EO (6-8-1886)	T. 10 S., R. 11 W., Section 30, Lincoln County	5	Lighthouse/ Yaquina Head	A	USCG	Maintain - existing withdrawal is serving its original purpose - protecting site
PLO 989	T. 3 S., R. 5 E., Sections 27 and 28, Clackamas County	600	Fish hatchery/ Eagle Creek	B	USFWS	Maintain - developed facility is still needed
PLO 3015	T. 4 S., R. 3 E., Section 13, Clackamas County	160	Seed orchard/ Walter Horning	B	BLM	Maintain - withdrawal is still serving its original purpose
PLO 3609	T. 4 S., R. 3 E., Section 23, Clackamas County	320	Seed orchard/ Walter Horning	B	BLM	Maintain - site serves beneficial purpose and is being further developed
PLO 3869	T. 3 S., R. 7 W., Section 32, Tillamook County	1,010	Recreation/ Nestucca River	B	BLM	Maintain - Rights-of-way under Section 507 of FLPMA would not be adequate
PLO 4305	T. 14 S., R. 7 W., Section 25, Benton County	132	Recreation/ Alsea Falls	B	BLM	Maintain - existing withdrawal is still serving its original purpose - protecting site
PLO 4537	T. 2 S., R. 7 E., Section 31, Clackamas County	529	Recreation/ Wildwood	C	BLM	Partial revocation - 100 acres - not necessary for proposed improvements; remainder of withdrawal is still serving its original purpose
PLO 4846	T. 8 S., R. 10 W., Section 27, Lincoln County	12	Road use	B	USFS	Revoke - suitable alternatives to withdrawal exist - third party easements
PLO 5136	T. 12 S., R. 7 W., Section 28, Benton County	40	Admin. site/ Marys Peak	B	USFS	Maintain - lands are being used for purposes they were withdrawn
PLO 5372	T. 8 S., R. 6 W., Section 33, Benton County	80	Research Natural Area/Little Sink	B	BLM	Maintain - withdrawal is still serving its original purpose

Table 7 Land Withdrawals and Recommendations to Maintain or Revoke Withdrawals (continued)

Authority[1]	Location	Approx. Acres	Purpose/ Name	Segregative Effect[2]	Surface Manage. Agency[3]	Recommendation to maintain or revoke and rationale
PP 477	T. 2 S., R. 4 E., Section 1, and T. 2 S., R. 5 E., Sections 13 and 15, Clackamas County	48	Electric power generation/ Sandy River-Marmot Dam (Bull Run Project)	B	FERC/ BLM	Maintain - withdrawal is still serving its original purpose
PP 2195	T. 4 S., R. 4 E., Section 13, and T. 4 S., R. 5 E., Section 7, Clackamas County	197	Electric power generation/ Clackamas	B	FERC/ BLM	Maintain - withdrawal is still serving its original purpose
PSC 170	T. 7 S., R. 3 and 4 E., Clackamas County	1,879	Potential power development/ Molalla River	C	BLM	Revoke - not necessary for potential power development
PSC 171	T. 8 S., R. 8 W. Lincoln County	957	Pot. power dev./ Siletz River	C	BLM	Not yet reviewed
PSC 304	T. 5 N., R. 6 and 7 W. and T. 3 N., R. 8 W. Clatsop County	64	Pot. power dev./ Nehalem River	C	BLM	Not yet reviewed
PSC 413	T. 14 and 15 S., R. 8 W. Benton County	316	Pot. power dev./ Alsea River	C	BLM	Not yet reviewed
PSR 89	T. 3 N., R. 8 W. Tillamook County	61	Pot. power dev./ Nehalem River	C	BLM	Not yet reviewed
PSR 94	T. 6 and 7 S., R. 3 E. Clackamas County	1,325	Pot. power dev./ Molalla River	C	BLM	Maintain - withdrawal is still serving its original purpose
PSR 458	T. 12 S., R. 1 W., Linn County	11	Pot. power dev./ S. Santiam River	C	BLM	Not yet reviewed
PSR 658, WPD 15	T. 2 S., R. 4 E. T. 3 S., R. 3 E. Clackamas County	5	Electric trans. lines	C	BLM	Revoke - no power lines to be protected
PSR 659, WPD 14	Various	6,149	Pot. power dev./ Alsea, Nehalem, Nestucca, Scappoose and Trask Rivers	C	BLM	Not yet reviewed
PSR 660, WPD 14	T. 1 and 2 S., R. 4, 5, 6 and 7 E. Multnomah and Clackamas Counties	3,356	Pot. power dev./ Sandy River	C	BLM	Revoke - water power development unlikely

Table 7 Land Withdrawals and Recommendations to Maintain or Revoke Withdrawals (continued)

Authority[1]	Location	Approx. Acres	Purpose/ Name	Segregative Effect[2]	Surface Manage. Agency[3]	Recommendation to maintain or revoke and rationale
PSR 661, WPD 14	Various	10,370	Pot. power dev./ Clackamas, Luckiamute, Molalla, Santiam, Tualatin and Yamhill Rivers	C	BLM	Not yet reviewed
PSR 664	Various	1,143	Pot. power dev./ Eagle Creek, South Yamhill, Molalla, and N. Santiam Rivers	C	BLM	Not yet reviewed
PSR 730, WPD 14, WPD 16	Various	1,900	Pot. power dev./ Clackamas, Nestucca, Sandy and Santiam Rivers	C	BLM	Not yet reviewed
REC WDL 49	T. 8 S., R. 2 E. Marion County	200	Recreation/ Silver Falls	B	BLM	Revoke - no longer valid - Recreation and Public Purposes leased to the State of Oregon

[1] Authority Abbreviations
- ANS - Air Navigation Site
- EO - Executive Order
- PLO - Public Land Order
- PP - Power Project
- PSC - Power Site Classification
- PSR - Power Site Reserve
- SO - Secretarial Order
- WPD - Water Power Designation

[2] Segregative Effect
- A - Withdrawn from operation of the general land laws, the mining laws and the mineral leasing laws.
- B - Withdrawn from operation of the general land laws and the mining laws.
- C - Withdrawn from operation of the general land laws only.

[3] Agency Acronyms
- BLM - Bureau of Land Management
- FAA - Federal Aviation Administration
- FERC - Federal Energy Regulatory Commission
- USCG - U.S. Coast Guard
- USFS - U.S. Forest Service
- USFWS - U.S. Fish and Wildlife Service
- USGS - U.S. Geological Survey

Source: Salem District realty records.

Table 8 Land Classifications

Type of Classification	Location	Acres	Purpose and Serial Number	Name
R&PP	T. 9 S., R. 4 W., Section 14 and 23	61.4	County Park Polk County (OR 36110)	Wells Island
R&PP	T. 3 N., R. 1 W., Section 9	1.2	County Park Columbia County (OR 7285)[1]	J.J. Collins Mem. Park
R&PP	T. 8 S., R. 1 E., Section 3	200	State Park State of Oregon (OR 27240)	Silver Falls
R&PP	T. 8 S., R. 1 E., Section 35 T. 8 S., R. 2 E., Section 31	44	State Park State of Oregon (OR 34517)	Silver Falls
R&PP	T. 2 N., R. 2 W., Section 15	1.3	Fire Station Multnomah County (OR 36110)	—
R&PP	T. 11 S., R. 3 E., Sections 25, 26 and 35 T. 12 S., R. 3 E., Sections 2, 3 and 10	459.2	Recreation Area Linn County (OR 36783)	Quartzville Creek
R&PP	T. 4 N., R. 3 W., Section 7	7.6	County Park Columbia County (OR 41597)	Scaponia
R&PP	T. 1 S., R. 5 E., Section 3	3.4	Water Treatment Plant Corbett Water District (OR 41744)	Corbett
R&PP	T. 1 S., R. 4 E., Sections 11 and 15	280	County Park Multnomah County (OR 10366)	Oxbow
R&PP	T. 9 S., R. 2 E., Section 9	10	County Park Marion County (OR 11999)	L. North Fork

R&PP = Recreation and Public Purposes Lease
[1] Expires 5/26/96

Source: Salem District realty records.

Management Actions/Direction, continued

Initiate action on the BLM-proposed withdrawals listed under land use allocations. This will involve recommendations to and approval by the secretary of the Department of the Interior.

Evaluate future withdrawal proposals for compliance with program objectives and federal law and recommend appropriate action to the secretary of the Department of the Interior.

Limit withdrawals to the minimum area needed and restrict only those activities that would be detrimental to the purposes of the withdrawal.

When the lease for the J.J. Collins Memorial Park expires, review it and determine whether it should be extended. All other classifications will remain in effect during the life of the plan. See table 10.

Roads

Objectives

Develop and maintain a transportation system that serves the needs of users in an environmentally sound manner. Arterial and major collector roads will form the backbone of the transportation system in the planning area.

Correct problems associated with high road density by emphasizing the reduction of minor collector and local road densities where such problems exist.

Manage roads to meet the needs identified under other resource programs (e.g., road closures for wildlife). Road management actions/direction are mentioned or implied primarily under Aquatic Conservation Strategy objectives, Riparian Reserves, Late-Successional Reserves, Water Quality and Soils, Wildlife, Fish Habitat, Special Status and SEIS Special Attention Species Habitat, Timber Resources, and Recreation.

Land Use Allocations

As of May 1993, there were approximately 2,555 miles of roads on BLM-administered lands in the district.

Management Actions/Direction — Riparian Reserves

Cooperate with federal, state, and county agencies and work with parties with road use agreements to achieve consistency in road design, operation, and maintenance necessary to attain Aquatic Conservation Strategy objectives.

For each existing or planned road, meet Aquatic Conservation Strategy objectives by:

- completing watershed analyses, including appropriate geotechnical analyses (i.e., examining soil and rock conditions in riparian and stream crossings) prior to construction of new roads or landings in Riparian Reserves;
- minimizing road and landing locations in Riparian Reserves;
- preparing road design criteria, elements, and standards that govern construction and reconstruction;
- preparing operation and maintenance criteria that govern road operation, maintenance, and management; minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow;
- restricting sidecasting as necessary to prevent the introduction of sediment to streams; and
- avoiding wetlands entirely when constructing new roads.

Determine the influence of each road on the Aquatic Conservation Strategy objectives through watershed analysis. Meet Aquatic Conservation Strategy objectives by:

- reconstructing roads and associated drainage features that pose a substantial risk;
- prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected; and
- closing and stabilizing, or obliterating and stabilizing roads based on the ongoing and potential effects to Aquatic Conservation Strategy objectives and considering short-term and long-term transportation needs.

Design and construct new culverts, bridges and other stream crossings and improve existing culverts, bridges and other stream crossings determined to pose a substantial risk to riparian conditions. New structures and improvements will be designed to accommodate at least the 100-year flood, including associated bedload and debris. Priority for upgrading will be based on the potential impact and the ecological value of the riparian resources affected. Crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.

Minimize sediment delivery to streams from roads. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslopes.

Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams (e.g., streams which can be made available to anadromous fish by removing obstacles to passage).

Develop and implement a Road Management Plan or a Transportation Management Plan that meets the Aquatic Conservation Strategy objectives. As a minimum, this plan will include provisions for the following activities:

- **inspections and maintenance during storm events;**
- **inspections and maintenance after storm events;**
- **road operation and maintenance giving high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources;**
- **traffic regulation during wet periods to prevent damage to riparian resources; and**
- **establishing the purpose of each road by developing the road management objective.**

Management Actions/Direction — Late-Successional Reserves

Construct roads in Late-Successional Reserves if the potential benefits of silviculture, salvage, and other activities exceed the costs of habitat impairment. If new roads are necessary to implement a practice that is otherwise in accordance with these guidelines, they will be kept to a minimum, routed through unsuitable habitat where possible, and designed to minimize adverse impacts. Alternative access, such as aerial logging, should be considered to provide access for activities in reserves.

Fall trees along rights-of-way if they are a hazard to public safety. Consider leaving material on site if available coarse woody debris is inadequate. Consider topping of trees as an alternative to falling.

Management Actions/Direction — Key Watersheds

Reduce existing road mileage within key watersheds. If funding is insufficient to implement reductions, neither construct nor authorize through discretionary permits a net increase in road mileage in Key Watersheds.

Management Actions/Direction — All Land Use Allocations

Address road management planning on a watershed basis consistent with Late-Successional Reserves, Riparian Reserves, and other major allocations. Specific road closures will be determined using standard analysis, public involvement, and notification procedures. District off-highway vehicle designations (open, limited, or closed to use of motorized vehicles) will be adjusted to conform to the approved road management plan.

Determine standards for new road construction during the project planning process. Standards will be the minimum necessary to meet objectives.

Management Actions/Direction, continued

Minimize new road construction in areas with fragile soils to reduce impacts to soils, water quality, and fisheries. Stabilize existing roads where they contribute to significant adverse effects on these resources.

Locate, design, construct, and maintain roads to standards that meet management objectives in accordance with the district road management plan.

Follow best management practices (see appendix C) for water quality and soil productivity to mitigate adverse effects on soils, water quality, fish, and riparian habitat during road construction and maintenance.

Reduce road density by closing minor collector and local roads in areas or watersheds where water quality degradation, big game harassment, or other road-related resource problems have been identified.

Acquire water rights for road management purposes.

When roads are constructed in Key Watersheds under nondiscretionary permits, close and restore at least an equal amount of existing roads to meet the management action/direction of reducing road mileage.

Noxious Weeds

Objectives

Contain and/or reduce noxious weed infestations on BLM-administered lands using an integrated pest management approach. Some noxious weeds expected to be subject to control are tansy ragwort, Canadian thistle, scotch broom, and knapweed.

Avoid introducing or spreading noxious weed infestations in any areas.

Land Use Allocations

No allocations are made for noxious weeds in the planning process.

Management Actions/Direction — Late-Successional Reserves

Evaluate impacts of nonnative plants (weeds) growing in Late-Successional Reserves.

Develop plans and recommendations for eliminating or controlling nonnative plants (weeds) which adversely effect Late-Successional Reserve objectives. Include an analysis of effects of implementing such programs on other species or habitats within reserves.

Management Actions/Direction — All Land Use Allocations

Continue to survey BLM-administered lands for noxious weed infestations, report infestations to the Oregon Department of Agriculture, and work with them to reduce infestations.

Use control methods which do not retard or prevent attainment of Aquatic Conservation Strategy objectives.

Apply integrated pest management methods (e.g., chemical, mechanical, manual and/or biological) in accordance with BLM's multistate environmental impact statement for noxious weed control and the related record of decision.

Hazardous Materials

Objectives

Minimize use of hazardous materials and eliminate known hazardous wastes on BLM-administered lands.

Land Use Allocations

No allocations are made for hazardous material sites in the planning process.

Management Actions/Direction

Identify, investigate, and arrange for removal of hazardous wastes on BLM-administered lands in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (the Act). Emergency response will be as specified in the District Hazardous Materials Contingency Plan. The response will include cleanup, proper notifications, criminal investigations, risk assessment, and other actions consistent with the Act and the nature of the emergency.

Store, treat, and dispose of hazardous materials in accordance with the Resource Conservation and Recovery Act and other appropriate regulations.

Use the Emergency Planning and Community Right-To-Know Act to coordinate emergency planning with state and local jurisdictions concerning hazardous materials, emergency notifications and routine reporting of hazardous materials inventories.

Remove and replace, if appropriate, all existing underground storage tanks with above ground storage facilities following state and federal regulations.

Until known hazardous wastes on BLM-administered lands are removed, protect employees and the public from exposure.

Provide information to the public regarding the need to properly dispose of hazardous wastes and the danger of becoming exposed.

Fire/Fuels Management

Objectives

Provide appropriate fire suppression responses to wildfires that will help meet resource management objectives.

Use prescribed fire to meet resource management objectives. This will include but not be limited to fuels management for wildfire hazard reduction, restoration of desired vegetation conditions, management of habitat, and silvicultural treatments.

Adhere to smoke management/air quality standards of the Clean Air Act and the state implementation plan for prescribed burning.

Land Use Allocations

None specifically for fire/fuels management.

Management Actions/Direction — General

Apply the management actions/direction in the Special Status and SEIS Special Attention Species and Habitat section.

Address fire/fuels management for all land use allocations as part of watershed analysis and project planning.

Coordinate fire management activities in rural interface areas with local governments, agencies, and landowners. During watershed analysis, identify additional factors which may affect hazard reduction goals.

Management Actions/Direction — Riparian Reserves

Design fuel treatment and fire suppression strategies, practices, and activities to meet Aquatic Conservation Strategy objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies will recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management activities could be damaging to long-term ecosystem function.

Locate incident bases, camps, helibases, staging areas, helispots and other centers for incident activities outside of Riparian Reserves. If the only suitable location for such activities is within the Riparian Reserve, an exemption may be granted following a review and recommendation by a resource advisor. The advisor will prescribe the location, use conditions, and rehabilitation requirements. Utilize an interdisciplinary team to predetermine suitable incident base and helibase locations.

Management Actions/Direction, continued

Minimize delivery of chemical retardant, foam, or other additives to surface waters. An exception may be warranted in situations where over-riding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor, when an escape would cause more long-term damage.

Design prescribed burn projects and prescriptions to contribute to attainment of Aquatic Conservation Strategy objectives.

Immediately establish an emergency team to develop a rehabilitation treatment plan needed to attain Aquatic Conservation Strategy objectives whenever Riparian Reserves are significantly damaged by a wildfire or a prescribed fire burning outside prescribed parameters.

Until watershed analysis is completed for a watershed, suppress wildfire to avoid loss of habitat and to maintain future management options.

Consider allowing some natural fires to burn under prescribed conditions. This decision will be based on additional analysis and planning.

Consider rapidly extinguishing smoldering coarse woody debris and duff.

Locate and manage water drafting sites (e.g., sites where water is pumped to control or suppress fires) to minimize adverse effects on riparian habitat and water quality as consistent with Aquatic Conservation Strategy objectives.

Management Actions/Direction — Late-Successional Reserves

Emphasize maintaining late-successional habitat in wildfire suppression plans.

Use minimum impact suppression methods for fuels management in accordance with guidelines for reducing risks of large-scale disturbances.

During fire suppression activities, consult with an interdisciplinary team to assure that habitat damage is minimized.

Until a fire management plan is completed for a Late-Successional Reserve or group of reserves, suppress wildfire to avoid loss of habitat and to maintain future management options.

Prepare a specific fire management plan prior to any habitat manipulation activities in Late-Successional Reserves. Specify how hazard reduction and other prescribed fire applications meet the objectives of the Late-Successional Reserve. Until the plan is approved, proposed activities will be subject to review by the Regional Ecosystem Office.

Apply prescribed fire in a manner which retains the amount of coarse woody debris determined through watershed analysis.

Consider allowing some natural fires to burn under prescribed conditions. This decision will be based on additional analysis and planning.

Consider rapidly extinguishing smoldering coarse woody debris and duff.

Management Actions/Direction — Adaptive Management Areas

Explore and support opportunities to research the role and effects of fire management on ecosystem functions.

Emphasize fire/fuels management cooperation across agency and ownership boundaries.

Follow fire/fuels management actions/direction in this resource management plan until Adaptive Management Area plans are completed.

Use accepted wildfire suppression strategies and tactics and conform with specific agency policy.

Management Actions/Direction — Matrix

Plan and implement prescribed fire treatments to minimize:

- intensive burning, unless appropriate for certain specific habitats, communities, or stand conditions;
- consumption of litter and coarse woody debris;
- disturbance of soil and litter that may occur as a result of heavy equipment operation; and
- the frequency of treatments.

Management Actions/Direction — All Land Use Allocations

Wildfire Suppression

Minimize the negative impacts of wildfire on ecosystem management objectives.

Respond to all wildfires. In most cases, responses will consist of aggressive initial attack to extinguish fires at the smallest size possible.

For wildfires that escape initial attack, consult with an interdisciplinary team to develop an analysis for containment of each wildfire (including escaped prescribed fires) and to evaluate the potential suppression damage compared to potential wildfire damage. Suppression tactics will consider:

- **the safety of firefighting personnel;**
- **how best to achieve coordination of wildfire suppression activities to avoid causing adverse impacts on federal and nonfederal lands;**
- **protection of specific attributes of each land use allocation;**
- **the appropriate use of suppression tools such as aircraft, bulldozers, pumps and other mechanized equipment, and a clear definition of any restrictions relating to their use;**
- **the potential adverse effects on meeting ecosystem management objectives;**
- **protection of forest structural components such as snags, duff, and coarse woody debris to the extent possible; and**
- **the rehabilitation of damaged areas.**

Prescribed Fire

Develop project-level prescribed fire plans using an interdisciplinary team approach. Plans will address:

- **adherence to smoke management and air quality standards;**
- **meeting stated objectives for the land use allocations;**
- **maintaining or restoring ecosystem processes or structure; and**
- **the role of natural fire in specific landscapes, current ecosystem needs, and wildfire hazard analysis included in the fire management plan.**

Fuels Management for Hazard Reduction

Modify the amount and type of fuels in order to lower the potential of fire ignition and rate of spread; protect resources by lowering the risk of high intensity, stand-replacing wildfires; and adhere to smoke management and air quality standards.

Reduce fire hazard through methods such as prescribed burning, mechanical or manual manipulation of forest vegetation and debris, removal of forest vegetation and debris, and combinations of these methods. Hazard reduction plans will be developed through an interdisciplinary team approach and will consider the following:

- **providing for the safety of firefighting personnel;**
- **identification of levels of coarse woody debris and snags of adequate size and in sufficient quantities to meet habitat requirements of species of concern;**
- **developing a fuel profile that supports land allocation objectives; and**
- **seeking a balance between reducing the risk of wildfire and the cost efficiency consistent with meeting land allocation objectives.**

Coordination and Consultation

The implementation of this resource management plan and the overriding SEIS record of decision, calls for a high level of coordination and cooperation among agencies. A formal procedure for interagency coordination has been created by a Memorandum of Understanding for Forest Ecosystem Management that has been entered into by the White House Office on Environmental Policy, the Department of the Interior, the Department of Agriculture, the Department of Commerce and the Environmental Protection Agency. The memorandum of understanding created several interagency groups, including the Interagency Steering Committee, Regional Interagency Executive Committee, and Regional Ecosystem Office. A detailed description of these groups is included in Attachment A, Section E, Implementation, of the SEIS record of decision.

Consultation under the Endangered Species Act will emphasize an integrated ecosystem approach. This will include involving the U.S. Fish and Wildlife Service and the National Marine Fisheries Service

in all relevant implementation planning, so their views can be made known. Actions proposed to implement this resource management plan will undergo consultation, either formal or informal, as appropriate. Consultation for the northern spotted owl on activities that are consistent with the standards and guidelines of the SEIS record of decision and that would not result in take of a listed species is expected to be informal. If take would result, incidental take statements will be provided through formal consultation.

Concurrent coordination with the Environmental Protection Agency and the Oregon Department of Environmental Quality on water quality standards and beneficial use requirements of the Clean Water Act will minimize project impacts. Similar coordination with the Environmental Protection Agency, Department of Environmental Quality and the Forest Service on minimizing impacts of emissions from prescribed burning will occur.

By documents signed April 22, 1980, and December 2, 1986, respectively, the Confederated Tribes of Siletz Indians and the Confederated Tribes of the Grande Ronde Community have off-reservation trust resources. These agreements were signed by officials of the state of Oregon, U.S. Department of the Interior, and U.S. Department of Justice. The agreements provide certain hunting and fishing rights which may be affected by the management of BLM-administered lands in the Salem District. Consultation with the tribes on a government-to-government basis, to ascertain if any aspect of this resource management plan conflicts with these agreements, has been initiated.

Use of the Completed Plan

Many of the management activities described in this resource management plan will be accomplished through contracts and permits. Performance standards are developed and included in a contract or permit. They require the contractor or permittee to comply with applicable laws, regulations, policies and plans. Selection of performance standards is governed by the scope of the action to be undertaken and the physical characteristics of the specific site. The standards, which include design features and mitigating measures, must be followed in carrying out an action.

Site-specific planning by interdisciplinary teams will precede most on-the-ground management activities. Interdisciplinary teams are comprised of relevant resource management disciplines. The interdisciplinary team process includes field examination of resources, selection of alternative management actions, analysis of alternatives, and documentation to meet National Environmental Policy Act requirements. Adjacent land uses will be considered during site-specific land management planning.

Potential minor changes, refinements or clarifications in the plan may take the form of maintenance actions. Maintenance actions respond to minor data changes and incorporation of activity plans. Such maintenance is limited to further refining or documenting a previously approved decision incorporated in the plan. Plan maintenance will not result in expansion of the scope of resource uses or restrictions or change the terms, conditions and decisions of the approved resource management plan. Maintenance actions are not considered a plan amendment and do not require the formal public involvement and interagency coordination process undertaken for plan amendments. Important plan maintenance will be documented in the annual district Planning Process Report or its equivalent. A plan amendment may be initiated because of the need to consider monitoring findings, new data, new or revised policy, a change in circumstances, or a proposed action that may result in the scope of resource uses or a change in the terms, conditions and decisions of the approved plan.

In addition to being routinely monitored, the resource management plan will be formally evaluated at the end of every third year after implementation begins. Evaluation will continue until such time as preparation of new plans, that would supersede the resource management plan over a substantial majority of its area, is well under way. The reason for the formal evaluation is to determine whether there is significant cause for an amendment or revision of the plan. Evaluation includes a cumulative analysis of monitoring records. The purpose of the analysis is to determine if the plan's goals and objectives are being or are likely to be met, and whether the goals and objectives were realistic and achievable in the first place.

Evaluation will also assess whether changed circumstances, such as changes in the plans of other government agencies or American Indian tribes, or new information have altered activities or

expected impacts on water, wildlife, socioeconomic conditions, etc. The environmental consequences of changed circumstances may paint a substantially different picture from that anticipated in this resource management plan.

As part of these third year evaluations, the allowable sale quantity will be reevaluated to incorporate the results of watershed analyses, monitoring, further inventory, and site-specific, watershed-specific or province-level decisions.

If an evaluation concludes that the plan's objectives are not achievable, a plan amendment or revision will be initiated. If the evaluation concludes that land use allocations or management actions/direction need to be modified, a plan amendment or revision may be appropriate. An analysis will address the need for either. If the analysis determines that amending the plan is appropriate, the amendment process set forth in 43 Code of Federal Regulations 1610.5-5 or 1610.5-6 will be followed. If amendment is not appropriate, National Environmental Policy Act procedures would still be followed before the modification is approved. If SEIS record of decision standards and guidelines or land-use allocations would be modified, the amendment process would be coordinated through the Regional Ecosystem Office and the Regional Interagency Executive Committee. Figure 1 shows how monitoring and/or evaluation could lead to a revision of management direction or other changes in the resource management plan.

No additional evaluations of this type will be done unless some changed circumstance or unusual event causes the continuing validity of the plan to be questioned. Following completion of each plan evaluation, a summary of its findings will be included in the district's annual program summary.

In future years, new plans may be prepared which would substantially supersede this resource management plan. If the new plan is well under way, and if some circumstances change or unusual events occur of a magnitude that call into question BLM's ability to meet some of the remaining plan objectives, interim management adjustments may be made to meet those objectives, without a plan amendment. The kind of circumstance which could lead to such an adjustment might be an announcement of research findings which clearly establish that some of the plan's goals and objectives are unlikely to be met. The kind of unusual event which could lead to such an adjustment might be a major catastrophe such as a wildfire or windstorm causing extensive damage to forest stands. Similar interim adjustments can be made at any time during the life of the plan, pending evaluation and possible plan amendment.

Adaptive Management

This approach to evaluation and interim adjustment will frame a process of adaptive management, permitting effective response to changing knowledge. Adaptive management is a continuing process of action-based monitoring, researching, evaluating and adjusting with the objective of improving the implementation and achieving the goals of the resource management plan. The resource management plan is based on current scientific knowledge. To be successful, it must have the flexibility to adapt and respond to new information. Under the concept of adaptive management, new information will be evaluated and a decision will be made whether to make adjustments or changes. The adaptive management approach will enable resource managers to determine how well management actions meet their objectives and what steps are needed to modify activities to increase success or improve results.

The adaptive management process will be implemented to maximize the benefits and efficiency of the resource management plan. This may result in the refinement of management direction or land-use allocations which may require amendment of the resource management plan. Adaptive management decisions may vary in scale from individual watersheds, specific forest types, physiographic provinces, or the entire planning area. Many adaptive management modifications may not require formal changes to the resource management plan.

The model displayed in figure 2 identifies the various steps, activities, and outline of a procedure for the adaptive management process. This diagram conveys the general concept, and is valuable as a starting point, for understanding adaptive management. A full and detailed explanation of the model, which is beyond the scope of this discussion, would require that each step be further broken down and defined.

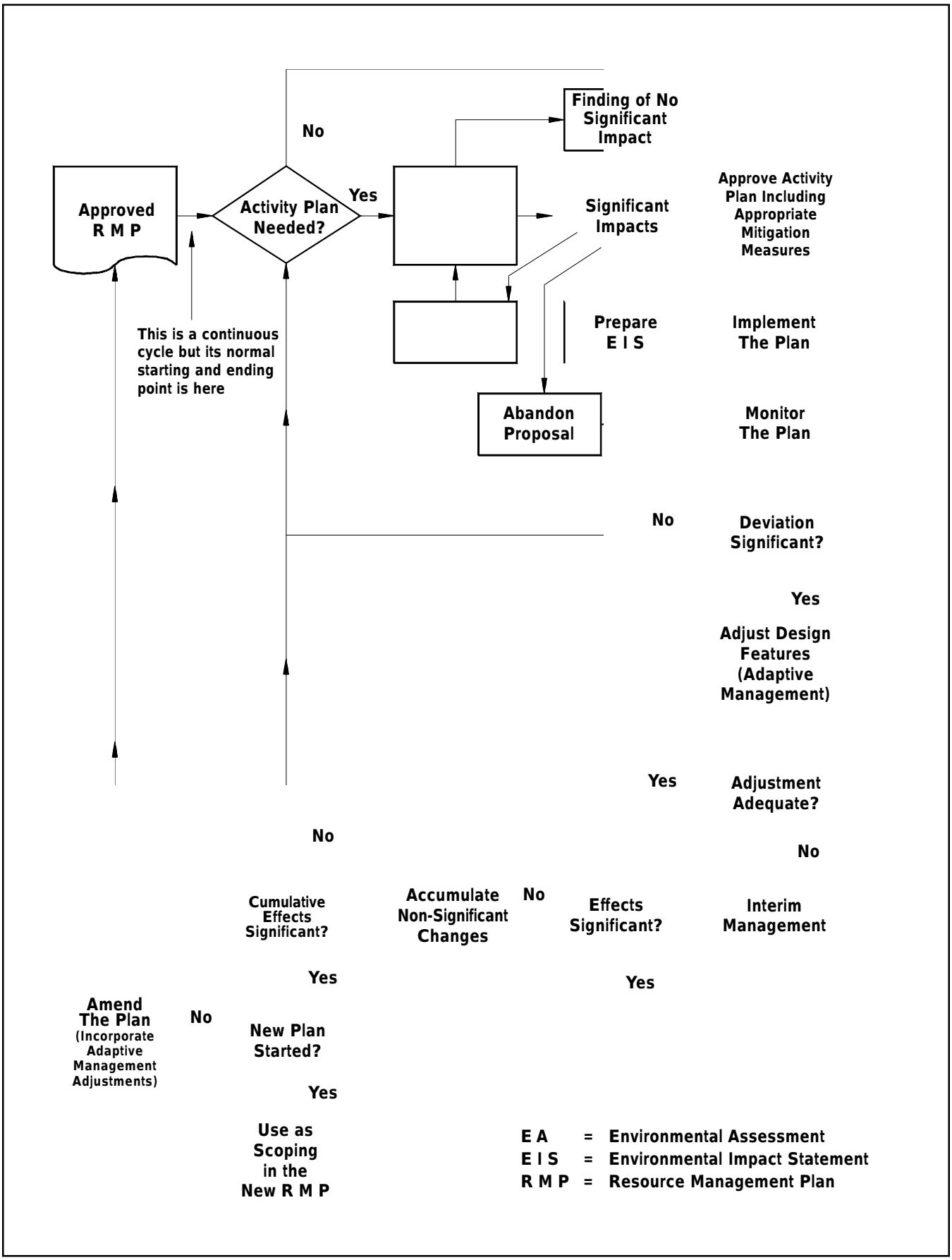

Figure 1 Process for Changing the Resource Management Plan

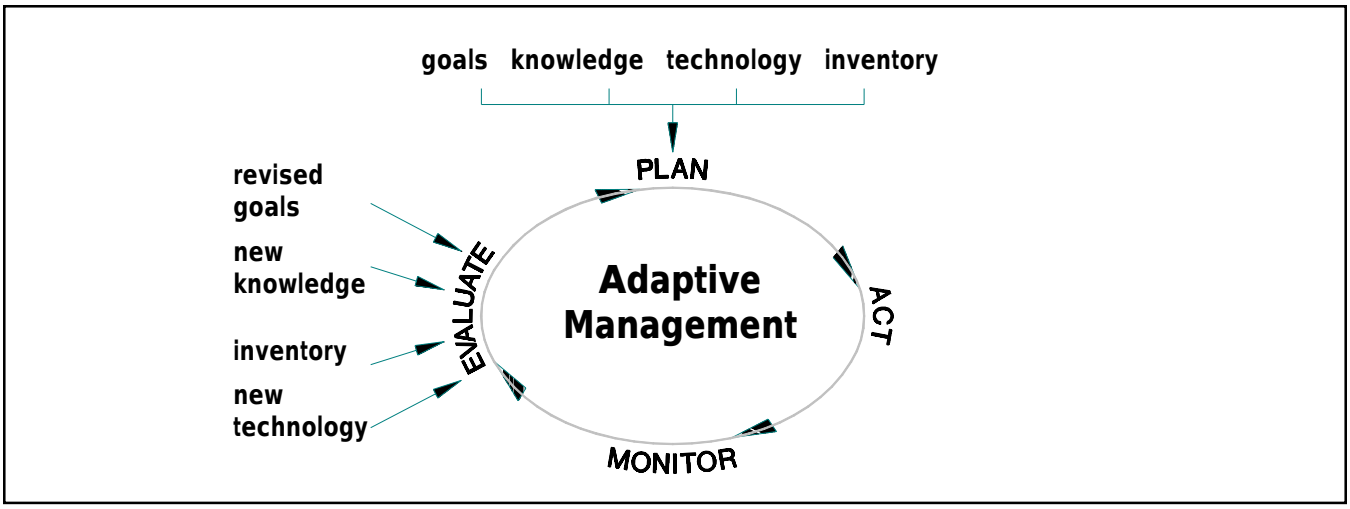

Figure 2 Basic Adaptive Management Model

New information that would compel an adjustment of strategy may come from monitoring, research, statutory or regulatory changes, organizational or process assessments, or any number of additional sources. During the evaluation process, personnel will analyze the information to determine the nature, scope, and importance of the new inform-ation.

Adaptive management could entail modification of silvicultural prescriptions. Increasing knowledge could provide greater certainty about anticipated climate change or the habitat needs of spotted owls, to cite two examples that could have widespread application. Adaptive management could equally entail modification of rather localized management practices to respond to the results of monitoring.

Any potential new management actions identified after resource management plan/record of decision approval will be reviewed before BLM moves to implement them. For example, if a new area of critical environmental concern proposal meets BLM criteria for consideration, the district manager may prescribe interim management measures for the remaining life of the plan or until addressed in a plan amendment. Such interim management must meet the objectives of the resource management plan, except where inconsistent with the regulations regarding areas of critical environmental concern.

Watershed Analysis

Watershed analysis is one of the principal means that will be used to meet the ecosystem management objectives of this resource management plan. Watershed analyses will be the mechanism to support ecosystem management at approximately the 20 to 200 square mile watershed level. Watershed analysis, as described here, focuses on its broad role in implementing the ecosystem management objectives prescribed by these standards and guidelines. The use of watershed analysis, as described in the Aquatic Conservation Strategy (see description of the resource management plan), is a more narrow focus and is just one aspect of its role.

Watershed analysis will focus on collecting and compiling essential resource management information within the watershed. It will be an analytical process, not a decision-making process with a proposed action requiring National Environmental Policy Act documentation. It will serve as the basis for developing project-specific proposals, and determining monitoring and restoration needs for a watershed. Some analysis of issues or resources may be included in broader scale analyses because of their scope. The information from the watershed analyses will contribute to decision making at other levels. Project-specific National Environmental Policy Act planning will use information developed from watershed analysis. For example, if watershed analysis shows that restoring certain resources within a watershed could contribute to achieving

landscape or ecosystem management objectives, then subsequent decisions will need to address that information.

The results of watershed analyses may include a description of the resource needs, issues, the range of natural variability, spatially explicit information that will facilitate environmental and cumulative effects analyses to comply with National Environmental Policy Act regulations, and the processes and functions operating within the watershed. Watershed analysis will identify potentially disjunct approaches and conflicting objectives within watersheds. The information from watershed analysis will be used to develop priorities for funding and implementing actions and projects, and will be used to develop monitoring strategies and objectives. The participation in watershed analysis of adjacent landowners, private citizens, interest groups, industry, government agencies, and others will be promoted.

Watershed analysis will be an ongoing, iterative process that will help define important resource and information needs. As watershed analysis is further developed and refined, it will describe the processes and interactions for all applicable resources. It will be an information-gathering and analysis process, but will not be a comprehensive inventory process. It will build on information collected from detailed, site-specific analyses. Information gathering and analysis will be related to management needs, and not be performed for their own sake. While generally watershed analysis will organize, collate, and describe existing information, there may be critical information needs that must be met before completing the analysis. In those instances, the additional information will be collected before completing the watershed analysis. In other instances, information needs may be identified that are not required for completing the watershed analysis but should be met for subsequent analyses, planning, or decisions.

Watershed analysis is a technically rigorous procedure with the purpose of developing and documenting a scientifically-based understanding of the ecological structures, functions, processes and interactions occurring within a watershed. The scope of the analysis for implementing the ecosystem management objectives of these standards and guidelines may include all aspects of the ecosystem. Some of these aspects include beneficial uses; vegetation patterns and distribution; flow phenomena such as vegetation corridors, streams, and riparian corridors; wind; fire (wild and prescribed fire, and fire suppression); wildlife migration routes; dispersal habitat; terrestrial vertebrate distribution; locally significant habitats; human use patterns throughout the ecosystem; cumulative effects; and hydrology. The number and detail of these aspects considered will depend on the issues pertaining to a given watershed.

In the initial years of implementation, the process for watershed analysis is expected to evolve to meet long-term objectives. However, some projects proposed for the first few years of implementation are in areas that require watershed analysis prior to approval of the projects (i.e., Key Watersheds and Riparian Reserves). In fiscal years 1995 and 1996, watershed analysis done for these projects may be less detailed than analyses that are completed in later years. Regardless, analysis done during the initial years (fiscal years 1995 and 1996) will comply with the following guidance:

- The goal of the analysis is to determine whether the proposed actions are consistent with the objectives, land-use allocations and management direction of the resource management plan.
- Existing information will be used to the greatest extent possible, with new information collected, to the maximum extent practicable, to fill crucial data gaps.
- Analysis will address the entire watershed, even though some areas may be analyzed at a lower level of precision, and the analysis of issues may be prioritized.
- Information from the analysis will flow into the National Environmental Policy Act documentation for specific projects, and will be used where practicable to facilitate Endangered Species Act and Clean Water Act compliance.
- Restoration opportunities will be identified.

A regional pilot watershed analysis program has been initiated to develop and test an effective long-term process. A scientifically peer-reviewed Watershed Analysis Guide will be finalized based on experiences gained in the pilot program.

The results of watershed analysis will influence final decisions both on timing of land-disturbing activities such as timber sales and on application of design features and mitigating measures, including best management practices for water quality protection. Monitoring and evaluating the effectiveness of best management practices is required by Oregon's Nonpoint Source Management Plan to ensure that water quality standards are achieved

and that beneficial uses are maintained. When monitoring identifies previously unanticipated impacts, the information gained from that monitoring will be used in subsequent development of mitigating measures, including best management practices, and considered in future watershed analyses.

Factored into these decisions on land-disturbing activities, where appropriate, will be an assessment of compliance with the anti-degradation policy of Oregon's Water Quality Standards (Oregon Administrative Rules 340-41-026(1)(a). These standards apply to existing high quality waters which exceed those levels necessary to support recreation and the propagation of fish, shellfish and wildlife.

Proposed timber sales and other land-disturbing activities will incorporate the adaptive management process for developing, implementing and evaluating nonpoint control (best management practices) to determine if water quality goals have been met. Modification of nonpoint-source controls, including best management practices, will be adjusted based upon sound scientific evidence. Where necessary, appropriate actions to mitigate adverse effects on water quality will be taken to protect designated beneficial uses.

Requirement for Further Environmental Analysis

Site-specific environmental analysis and documentation (including environmental assessments, categorical exclusions or administrative determinations where appropriate, and resource management plan conformance determination) will be accomplished for each action or type of treatment under consideration. Where the action is to be accomplished by a contractor or timber sale purchaser, the environmental assessment or other environmental analysis is a primary means for determining appropriate contract stipulations. Where the action is to be accomplished by BLM personnel, the environmental analysis is a primary means for determining how it will be conducted. When determining whether activities retard or prevent attainment of Aquatic Conservation Strategy objectives, the scale of analysis typically will be BLM analytical watersheds or similar units.

Watershed analysis or province analysis will often precede environmental analysis of specific proposals, and the findings of such preceding analyses will be addressed in documentation of the environmental analyses. Similarly, late-successional reserve assessments will precede activities in those reserves and their findings will be addressed in environmental analysis of those activities. Ultimately, watershed analysis will serve as the basis for developing project-specific proposals and determining monitoring and restoration needs for a watershed. Project-specific National Environmental Policy Act planning will use information developed from watershed analysis. By improving understanding of the ecological structures, functions, processes and interactions occurring within a watershed, watershed analysis will enhance the ability to predict direct, indirect and cumulative impacts of specific proposals in that watershed.

Analyses of proposals for the use of prescribed fire will adhere to the requirements of the Clean Air Act and the state implementation plan (including the Visibility Protection Plan and Smoke Management Plan). Conformity determinations—to evaluate whether BLM actions comply with the State Implementation Plan—will be conducted in association with site-specific environmental analysis, where emissions can be most reasonably forecast in quantified terms. These analyses will specifically evaluate the effects of project-specific prescribed burning on nonattainment areas.

Accurate assessment of local and airshed-level air quality effects of ecosystem management may require cumulative effects analysis, reflecting all relevant BLM actions, as well as expected actions of other parties. Coordination with other agencies is implicit. Cumulative effects analysis will include consideration of the effects on visibility and regional haze. Where extensive fuel hazard reduction by prescribed burning is considered, the analysis also will consider the impact of prescribed burning on reducing the potential for wildfire emissions. This will be done in a quantified tradeoff analysis, comparing emissions from prescribed fire with potential emissions from wildfires if prescribed burning is not accomplished. Factors considered when establishing the geographic boundaries for a cumulative effects analysis include whether the action will result in impacts that cross administrative boundaries, and whether the action will affect sensitive air quality regions (i.e., class I areas and nonattainment areas). Resultant analysis may be based on airsheds.

Interdisciplinary impact analysis will be tiered within the framework of applicable environmental analyses. Tiering is used to prepare more specific documents without duplicating relevant parts of previously prepared general documents. The more specific environmental assessment or other environmental analysis cannot lead directly to a change in the decisions based on the more general environmental impact statement to which it is tiered. It could, however, result in some interim management direction pending plan revision, or a proposal to amend the plan. If an environmental assessment indicates potential for significant impacts that are seriously different from those described in an existing environmental impact statement, a new environmental impact statement (or supplement to an existing environmental impact statement) may be required.

Specific proposals for treatment to manage competing vegetation and for control of noxious weeds will be addressed in site-specific environmental assessments.

Availability of environmental assessments for public review will be announced in a minimum of one, and generally all, of the following ways:

- News release distributed to the newsroom of area newspapers, television, and radio stations;
- Notices available at the Salem District Office;
- Mailings to known interested/affected people, groups, tribal units, governmental agencies and businesses. These mailings may include, but are not limited to, the "Salem District Project Update"; and
- Legal notices in one or more newspapers circulated in the project area.

Management of Newly Acquired Lands

Lands may come under BLM administration after completion of the resource management plan/ record of decision through exchange, donation, purchase, revocation of withdrawals of other federal agencies, or relinquishment of Recreation and Public Purpose Act leases. Newly acquired or administered lands or interests in lands will be managed for their highest potential or for the purposes for which they are acquired. For example, lands acquired within special management areas with congressional or resource management plan allocation/direction will be managed in conformance with guidelines for those areas. If lands with unique or fragile resource values are acquired, it may be appropriate to protect those values until the next plan revision.

Lands acquired with no identified special values or management goals will be managed in the same manner as surrounding or comparable BLM-administered lands. This implies typical timber harvest opportunities, intensive timber management practices, management of the mineral estate, standard operating procedures and precommitted mitigation measures.

The Budget Link

The initial annual cost of implementing the resource management plan is reflected in the President's fiscal year 1995 budget, approximately $17,000,000 for the Salem District. There is not yet, however, a clear understanding of what the management needs and costs of the ecosystem management approach will be, so future year budget estimates may differ as experience is gained in implementing the resource management plan.

Timber sale levels and associated programs will be reduced if annual funding is not sufficient to support the relevant actions assumed in the plan, including mitigation and monitoring. The extent of the reduction will be based on the principle of program balance as envisioned in the plan. For example, if funding in a given year is sufficient only to support half of planned annual investments in precommercial thinning, the otherwise anticipated timber sale volume for that year would be reduced by half of the portion of the declared allowable sale quantity attributable to precommercial thinning. If, in subsequent years, budget levels permit BLM to eliminate the backlog of unfunded investments that have accumulated, timber sale levels will be adjusted upward to the extent that the work can be accomplished. If subsequent budget levels create a cumulative shortfall over a few years, the allowable sale quantity will be adjusted downward.

This principle will apply similarly to management of roads and other facilities. If maintenance of such facilities is not adequately funded, some of them may be closed to scale back management commitments to the level that is budgeted.

Monitoring

The BLM planning regulations (43 Code of Federal Regulations 1610.4-9) call for the monitoring and evaluation of resource management plans at appropriate intervals.

Monitoring is an essential component of natural resource management because it provides information on the relative success of management strategies. The implementation of the resource management plan will be monitored to ensure that management actions: follow prescribed management direction (implementation monitoring), meet desired objectives (effectiveness monitoring), and are based on accurate assumptions (validation monitoring) (see appendix J). Some effectiveness and most validation monitoring will be accomplished by formal research.

Monitoring will be an integral component of many new management approaches such as adaptive management and ecosystem management.

Adaptive management is based on monitoring that is sufficiently sensitive to detect relevant ecological changes. In addition, the success of adaptive management depends on the accuracy and credibility of information obtained through inventories and monitoring. Close coordination and interaction between monitoring and research are essential for the adaptive management process to succeed. Data obtained through systematic and statistically valid monitoring can be used by scientists to develop research hypotheses related to priority issues. Conversely, the results obtained through research can be used to further refine the protocols and strategies used to monitor and evaluate the effectiveness of resource management plan implementation.

Monitoring results will 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, will 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 will not remain static. The monitoring plan will be periodically evaluated to ascertain that the monitoring questions and standards are still relevant, and will be adjusted as appropriate. Some monitoring items may be discontinued and others may be added as knowledge and issues change with implementation.

Watershed analysis is one of the principal analyses that will be used to meet the ecosystem management objectives. Information from watershed analysis will also be used in developing monitoring strategies and objectives. Specific to monitoring, the results and findings from watershed analysis 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 will provide information about patterns and processes within a watershed and provide information for monitoring at that scale.

Monitoring information will be collected 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 will not be necessary or desirable to monitor every management action or direction. Unnecessary detail and unacceptable costs will be avoided by focusing on key monitoring questions and proper sampling methods. The level and intensity of monitoring will vary, depending on the sensitivity of the resource or area and the scope of the proposed management activity.

Resource management plan monitoring will be conducted at multiple levels and scales. Monitoring will 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 will examine how well specific management direction has been applied on the ground and how effectively it produces expected results. Monitoring at broader levels will measure how successfully projects and other activities have achieved the objectives for those management areas.

Monitoring will 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 will build on past and present monitoring work. In addition, specific monitoring protocols, criteria, goals, and reporting formats will be developed, subject to review and guidance of the Regional Ecosystem Office. This guidance will 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 will be reported in an "Annual Program Summary", which will be published starting the second year following initial implementation of this resource management plan. The Annual Program Summary will track and assess the progress of plan implementation, state the findings made through monitoring, specifically address the Implementation Monitoring Questions posed in each section of the monitoring plan and serve as a report to the public.

Each resource area will be responsible for the collection, compilation and analysis of much of the data gained through monitoring activities. Resource areas will report their findings and recommendations to the district for consolidation and publication in the annual program summary.

The monitoring plan for the resource management plan is tiered to the monitoring and evaluation plan for the SEIS record of decision. The SEIS monitoring and evaluation plan is not yet fully refined. Therefore, the resource management plan monitoring plan is not complete. As components of the regional (SEIS) monitoring and evaluation plan are completed or refined, the resource management plan monitoring guidance will be conformed to the regional plan. BLM has been, and will continue to be, a full participant in the development of the SEIS monitoring and evaluation plan. Ongoing BLM effectiveness and validation monitoring will continue where it is relevant to resource management plan direction (e.g., stocking surveys, threatened and endangered species studies and water quality measurements).

The SEIS and resource management plan monitoring plans will not identify all the monitoring the Salem District will do. Activity and project plans may identify monitoring needs of their own.

Research

A research plan will be developed by the Research and Monitoring Committee identified in the SEIS record of decision.

Ongoing research in Riparian Reserves will be analyzed to ensure that significant risk to the watershed does not exist. If significant risk is present and cannot be mitigated, study sites will be relocated. Some activities not otherwise consistent with the objectives may be appropriate, particularly if the activities will test critical assumptions of the President's Forest Plan; will produce results important for establishing or accelerating vegetation and structural characteristics for maintaining or restoring aquatic and riparian ecosystems; or the activities represent continuation of long-term research. These activities will be considered only if there are no equivalent opportunities outside of Riparian Reserves and Key Watersheds.

Salem District

Resource Management Plan Index

Index

A

access 12, 17, 18, 46, 50, 55-57, 63
adaptive management 5, 8, 19, 41, 69, 75
Adaptive Management Area 5, 15, 19, 20, 29, 32, 43, 46, 50, 55, 66-67
Administratively Withdrawn Area 8
air quality 22, 65, 67, 73
allowable sale quantity 7, 10. 46-47, 69, 74
American Indians 27, 36, 68, 74
anadromous fish 6, 11, 15, 27, 63
animals 31, 46, 47
Aquatic Conservation Strategy 2, 5-7, 9-14, 22-25, 27, 38, 42, 47, 49-51, 54, 63-66, 71, 73
area of critical environmental concern 33, 71

B

back country byways 42, 44
bald eagles 27, 32
best management practices 11, 23, 28, 64, 72-73
biological diversity 5, 17, 24, 53, 54
budget 74

C

community stability 20
Congressionally Reserved Area 8
Connectivity/Diversity Blocks 4, 5, 20, 21, 25, 46, 48, 49
consistency 11, 23, 62
consultation 4, 18, 29, 54, 56, 66-68
coordination 4, 14, 19-20, 25, 32, 44, 56, 68, 73, 75
critical habitat 2
cultural resources 36-37, 41
cumulative effects 72-73

D

District-Designated Reserve 5, 15, 55

E

ecological health 5
ecological principles 4-5
elk 24, 26
employment 20
energy 50-52
environmental analysis 73-74
extensive recreation management area 41, 42, 44

F

fertilization 47, 48
fire/fuels management 13, 16, 20-22, 65
fish 2, 6,-7, 10-11, 13-15, 18, 20, 23, 27-28, 41, 64, 73
fragile areas (sites) 23, 51
fuelwood 11, 17, 22, 49, 50

G

General Forest Management Area 5, 20-21, 25, 41, 46, 48
green trees 5, 17, 20-21, 25-26 48-49

H

hazardous materials 64-65
herbicides 14, 23, 39, 46

I

instant study area 3, 38
issues 3-4, 24, 71-72, 75

K

Key Watersheds 4, 6,-7, 14-15, 23, 47, 56, 63-64, 72, 76

L

land tenure 53-55
land use allocations 4-5, 7-8 10, 15, 19, 21-24, 27-33, 36-39, 41-43, 46-47, 49-51, 53-57, 62-67
Late-Successional Reserves 2, 4-8, 15-20, 25, 27, 29, 42-43, 49, 51, 54-56, 63-64, 66

M

marbled murrelet 2, 15, 19,-20, 29, 32
Matrix 4, 8-9 20-22, 24-25, 32, 46, 66
minerals 1, 3, 12-13, 17, 38, 43, 50, 54, 74
mitigation 7, 14, 18, 22-23, 32, 37, 39, 42, 74
monitoring 3-4, 8, 13, 16, 19, 22, 33, 39, 47, 50-51, 68-69, 71-76

N

noxious plants/weeds 3, 64, 74

O

off-highway vehicles 23, 41-45, 63
old growth 1-2, 4-5, 15, 19-20, 26, 29, 48
outstanding natural area 3, 8, 33, 41, 49

P

planning criteria 3
plants, special status 2, 8-9, 20, 28-29, 31, 33, 49
prescribed fire 8, 13, 16, 18, 20-22, 24, 30, 33, 65-67, 72-73
protection buffers 8-9, 15, 19, 26, 30-31
public involvement 1, 3, 63, 68

R

recovery plan 2, 15, 32-33
recreation 5, 12, 16-18, 23, 33, 41-42, 53-54, 57, 73-74
reforestation 47
research 4, 20, 33, 66, 69, 71, 75-76
research natural area 3, 8, 33, 55
resource programs 4-5, 7, 8, 19, 22, 43, 62
rights-of-way/easements (see access)
riparian area management 14
Riparian Reserve 2, 5-14, 20,-27, 38, 42-43, 48-51, 54-56, 62-63, 65, 72, 76
riparian zones 6, 19,-20
roads 7, 11-12, 17, 22-24, 26, 32, 39, 49-50, 52, 55, 62, 64, 74
rural interface areas 39, 46, 65

S

salvage 11, 16-17, 44, 46, 63
SEIS special attention species 8-9, 28, 30-31, 49, 65
silvicultural practices 7, 11, 16-17, 21, 32, 46-47, 63, 71
site productivity 50
smoke 22, 65, 67, 73
snags 5, 16-17, 20-21, 24-25, 31, 46, 67
soils 10, 22-24, 64
special areas 33, 41, 55, 57
special forest products 18, 41, 49
special recreation management area 8, 42, 44, 57
spotted owl 1-2, 4, 15, 19-22, 26, 32, 68, 71
survey and manage 8, 30-31, 43

T

thinning 15-17, 20, 26, 31, 47-49, 74
threatened or endangered species 18, 32, 54, 76
timber harvest 7, 11, 21-22, 25, 31, 38-39, 46-47, 74
Timber Production Capability Classification 8, 23, 27
timber supply 19

V

visual resources 5, 36, 38, 46, 55

W

water 6, 10, 13, 14, 22-23, 56, 64, 66, 69, 75
water quality 2, 6-7, 13, 22-23, 47, 64, 66, 68, 72-73, 76
watershed analysis 6-8, 10-11, 13, 16, 18, 20, 24, 26-27, 29, 36-37, 39, 43-44, 46-47, 52, 62, 65-66, 69, 71, 73, 75
watershed restoration 6, 7, 14, 18, 23
wetlands 6, 10-11, 23-24, 49, 62
wild and scenic rivers 3, 5, 8, 12, 38, 49, 57
wilderness 3, 5, 8, 12, 15, 38, 43, 49, 55
wildfire 13, 18, 20, 22, 46, 65-67, 69, 73
wildlife 2, 10, 14, 18, 24-25, 41, 51, 54-55, 62, 69, 72-73
withdrawals 43-44, 57, 74
woody debris 5-6, 11, 13-14, 16-18, 20-21, 25-26, 46, 63, 66-67

Salem District

Resource Management Plan Appendices

Appendices

A-1 Summary of Land Allocations and Management Actions/Direction A-1–1

A-2 Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl A-2–1

B-1 Management for SEIS Special Attention Species B-1–1

B-2 BLM Special Status Species B-2–1

C Best Management Practices C-1
Timber Production Capability Classification Fragile Code Guidance C-11

D Silvicultural Systems and Harvest Methods D-1

E The Forest Genetics Program E-1

F Restrictions on Mineral and Energy Exploration and Development Activity F-1

G Land Tenure Adjustment, Zone 3 Lands G-1

H Land Tenure Adjustment Criteria H-1

I Proposed Withdrawals (Highway 101) I-1

J Monitoring J-1

Appendix A-1 Summary of Land Allocations and Management Actions/Direction
(detailed management direction is described in the resource management plan)

Major Land Allocations[1]	Acres
Late-Successional Reserves	
Outside the Adaptive Management Area	132,100
Inside the Adaptive Management Area[2]	79,700
Other Adaptive Management Area[2] (NonLSR)	43,700
General Forest Management Area	107,300
Connectivity/Diversity Blocks	27,400
Other[3]	7,900
Total	398,100

1 Riparian Reserves underlie all of the allocations/classifications shown in this chart. Overlaps could not be eliminated due to limitations in the database. There are no overlaps in the other acres.
2 Total Adaptive Management Area acreage is 123,400.
3 This category includes a District-Designated Reserve and Table Rock Wilderness.

Water Quality and Riparian Zones	Acres
Riparian Reserves	221,800

Old Growth and Mature Forest Habitat	Acres
Management Decision: Manage 55 percent of the land as Late-Successional Reserves. Manage 7 percent as Connectivity/Diversity Blocks.	
Area managed for retention and development of older forest[1]	219,700
Area managed for maintenance of older forest characteristics[2]	27,400
Older forest retained end of first decade[3]	107,600

1 Late-Successional Reserve, District-Designated Reserve, and Table Rock Wilderness.
2 Connectivity/Diversity Blocks.
3 Forest 100 years and older.

Timber	Acres
Forest Management Allocations (acres of commercial forest land):	
Intensive or General Forest Management Area	50,800
Restricted	10,700
Enhancement of other uses or not available	273,500
Practices (assumed average annual acres for first decade):	
Regeneration harvest	600
Commercial thinning/density management harvest	910
Site preparation	
Prescribed fire	480
Other	590
Stand maintenance/protection	3,130
Release/precommercial thinning	2,970
Brushfield/hardwood conversion	90
Planting/regular stock	480
Planting/genetically selected stock	450
Fertilization	600
New road construction (miles / acres) first ten years	5 / 26
Allowable sale quantity (million cubic feet)	5.7
Allowable sale quantity (million board feet)	34.8
Miscellaneous volume (million cubic feet)	0.7
Miscellaneous volume (million board feet)	4.0

Appendix A-1 Summary of Land Allocations and Management Actions/Direction (continued) (detailed management direction is described in the resource management plan)

Special Status Species Including Threatened and Endangered Species Habitat	Acres
Management Decision: Manage habitats of federal candidate, state-listed and bureau sensitive species on all BLM-administered lands.	
Area managed so as not to contribute to need to list	398,100

Wildlife (Including Fisheries) Habitat	
Special habitat buffers (feet)	100-200
Fish habitat improvement (miles)	54
Forage seeding (acres / year)	200-500

Special Areas	Number/Acres
Existing Special Areas	21 / 7,484
New Special Areas	9 / 1,375
Total Special Areas	30 / 8,859

Recreation Resources	Number/Acres
Recreation sites	
Existing	12 / 800
Potential	10 / —
Special Recreation Management Areas	
Existing	4 / 1,800
New	7 / 70,800
Area open to off-highway vehicle use	— / 129,900
Area limited to off-highway vehicle use	— / 229,200
Area closed to off-highway vehicle use	— / 39,000
Trails	
Existing (number / miles)	8 / 47
Potential (number)	11

Wild and Scenic Rivers	Number/Miles
River segments found suitable for designation as:	
Recreational	2 / 27.7
Scenic	0 / 0
Wild	0 / 0

Visual Resources	Acres
Management Decision: Manage congressionally designated and other high value, highly sensitive areas as VRM class I. Manage high value, moderately sensitive areas as VRM class II. Manage other areas as VRM classes III and IV.	
Area managed as VRM class I	14,100
Area managed as VRM class II	22,800
Area managed as VRM class III	59,600
Area managed as VRM class IV	301,600

VRM = Visual resource management.

Appendix A-1 Summary of Land Allocations and Management Actions/Direction (continued) (detailed management direction is described in the resource management plan)

Land Tenure	Acres
Management Decision: Make exchanges of O&C lands to contribute to biological diversity or to enhance timber management. Substantial acres of O&C forest land available for timber management would not be exchanged for lands to be managed for a single purpose. Sell public domain lands and O&C lands other than available commercial forest land, meeting criteria of Federal Land Policy and Management Act section 203(a). Make leases to accommodate other appropriate uses.	
Zone 1	160,200
Zone 2	228,000
Zone 3	9,900

Rights-of-Way	Acres
Rights-of-way exclusion areas	24,300
Rights-of-way avoidance areas	239,800

Energy and Mineral Resources	Acres
Area open to leasable energy/mineral development	391,900
Area closed to leasable energy/mineral development	6,200
Area open to locatable energy/mineral development	376,000
Area closed to locatable energy/mineral development	22,100
Area open to salable energy/mineral development	171,600
Area closed to salable energy/mineral development	226,500

Rural Interface Area Management	Acres
Area considered for alternative management practices	36,380+[1]
Area where clearcutting, herbicide spraying and prescribed burning is excluded	0
Area managed for VRM class II objectives	0
Area managed for VRM class III objectives	0

VRM = Visual resource management.

[1] BLM-administered lands adjacent to areas zoned for lots larger than 40 acres would also be considered for alternative management practices.

Appendix A-2
Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl

Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl

This appendix consists of the record of decision and its appendix A, published in April 1994, for the *Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*. It is referred to in this resource management plan as the SEIS record of decision.

The SEIS record of decision is bound separately from the resource management plan and is incorporated by reference. The Draft and Final SEIS and the SEIS record of decision were sent to those who received copies of the Draft Salem District Resource Management Plan and Environmental Impact Statement. It was also sent to agencies, libraries, and others who requested it. It is available upon request.

To obtain a copy of the record of decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl, send a request in writing to:

Regional Ecosystem Office
P.O. Box 3623
Portland, Oregon 97208-3623

Appendix B-1
Management for SEIS Special Attention Species

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Fungi					
Mycorrhizal Fungi					
Boletes					
Gastroboletus subalpinus	X		X		
Gastroboletus turbinatus			X		
Boletes, low elevation					
Boletus piperatus			X		
Tylopilus pseudoscaber	X		X		
Rare Boletes					
Boletus haematinus	X		X		
Boletus pulcherrimus	X		X		
Gastroboletus imbellus	X		X		
Gastroboletus ruber	X		X		
False Truffles					
Nivatogastrium nubigenum	X		X		
Rhizopogon abietis			X		
Rhizopogon atroviolaceus			X		
Rhizopogon truncatus			X		
Thaxterogaster pingue			X		
Uncommon False Truffle					
Macowanites chlorinosmus	X		X		
Rare False Truffles					
Alpova alexsmithii	X		X		
Alpova olivaceotinctus	X		X		
Arcangeliella crassa	X		X		
Arcangeliella lactarioides	X		X		
Destuntzia fusca	X		X		
Destuntzia rubra	X		X		
Gautieria magnicellaris	X		X		
Gautieria otthii	X		X		
Leucogaster citrinus [3]	X		X		
Leucogaster microsporus	X		X		
Macowanites lymanensis	X		X		
Macowanites mollis	X		X		
Martellia fragrans	X		X		
Martellia idahoensis	X		X		
Martellia monticola	X		X		
Octavianina macrospora	X		X		

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.
[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).
[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Management for SEIS Special Attention Species (continued)

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Octavianina papyracea	X		X		
Rhizopogon brunneiniger	X		X		
Rhizopogon evadens var. *subalpinus*	X		X		
Rhizopogon exiguus	X		X		
Rhizopogon flavofibrillosus	X		X		
Rhizopogon inquinatus	X		X		
Sedecula pulvinata	X		X		
Undescribed Taxa, Rare Truffles and False Truffles					
Alpova sp. nov. #Trappe 9730	X		X		
Alpova sp. nov. #Trappe 1966	X		X		
Arcangeliella sp. nov. #Trappe 12382	X		X		
Arcangeliella sp. nov. #Trappe 12359	X		X		
Chamonixia pacifica sp. nov. #Trappe 12768	X		X		
Elaphomyces sp. nov. #Trappe 1038	X		X		
Gastroboletus sp. nov. #Trappe 2897	X		X		
Gastroboletus sp. nov. #Trappe 7515	X		X		
Gastrosuillus sp. nov. #Trappe 7516	X		X		
Gastrosuillus sp. nov. #Trappe 9608	X		X		
Gymnomyces sp. nov. #Trappe 4703,5576	X		X		
Gymnomyces sp. nov. #Trappe 5052	X		X		
Gymnomyces sp. nov. #Trappe 1690,1706,1710	X		X		
Gymnomyces sp. nov. #Trappe 7545	X		X		
Hydnotrya sp. nov. #Trappe 787,792	X		X		
Hydnotrya subnix sp. nov. #Trappe 1861	X		X		
Martellia sp. nov. #Trappe 649	X		X		
Martellia sp. nov. #Trappe 1700	X		X		
Martellia sp. nov. #Trappe 311	X		X		
Martellia sp. nov. #Trappe 5903	X		X		
Octavianina sp. nov. #Trappe 7502	X		X		
Rhizopogon sp. nov. #Trappe 9432	X		X		
Rhizopogon sp. nov. #Trappe 1692	X		X		
Rhizopogon sp. nov. #Trappe 1698	X		X		
Thaxterogaster sp. nov. #Trappe 4867,6242,7427,7962,8520	X		X		
Tuber sp. nov. #Trappe 2302	X		X		
Tuber sp. nov. #Trappe 12493	X		X		
Rare Truffles					
Balsamia nigra	X		X		
Choiromyces alveolatus	X		X		
Choiromyces venosus	X		X		
Elaphomyces anthracinus	X		X		
Elaphomyces subviscidus	X		X		

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).

[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Management for SEIS Special Attention Species (continued)

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Chanterelles					
Cantharellus cibarius [3]			X	X	
Cantharellus subalbidus [3]			X	X	
Cantharellus tubaeformis			X	X	
Chanterelles - Gomphus					
Gomphus bonarii			X		
Gomphus clavatus [3]			X		
Gomphus floccosus [3]			X		
Gomphus kauffmanii			X		
Rare Chanterelle					
Cantharellus formosus	X		X		
Polyozellus multiplex	X		X		X
Uncommon Coral Fungi					
Ramaria abietina			X		
Ramaria araiospora	X		X		
Ramaria botryis var. *aurantiiramosa*	X		X		
Ramaria concolor f. tsugina			X		
Ramaria coulterae			X		
Ramaria fasciculata var. *sparsiramosa*	X		X		
Ramaria gelatiniaurantia	X		X		
Ramaria largentii	X		X		
Ramaria rubella var. *blanda*	X		X		
Ramaria rubrievanescens	X		X		
Ramaria rubripermanens	X		X		
Ramaria suecica			X		
Ramaria thiersii	X		X		
Rare Coral Fungi					
Ramaria amyloidea	X		X		
Ramaria aurantiisiccescens	X		X		
Ramaria celerivirescens	X		X		
Ramaria claviramulata	X		X		
Ramaria concolor f. marri	X		X		
Ramaria cyaneigranosa	X		X		
Ramaria hilaris var. *olympiana*	X		X		
Ramaria lorithamnus	X		X		
Ramaria maculatipes	X		X		
Ramaria rainierensis	X		X		
Ramaria rubribrunnescens	X		X		
Ramaria stuntzii	X		X		

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).

[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Management for SEIS Special Attention Species (continued)

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Ramaria verlotensis	X		X		
Ramaria gracilis	X		X		
Ramaria spinulosa	X		X		
Phaeocollybia					
Phaeocollybia attenuata			X		
Phaeocollybia californica	X		X		
Phaeocollybia carmanahensis	X		X		
Phaeocollybia dissiliens	X		X		
Phaeocollybia fallax			X		
Phaeocollybia gregaria	X		X		
Phaeocollybia kauffmanii	X		X		
Phaeocollybia olivacea			X		
Phaeocollybia oregonensis	X		X		
Phaeocollybia piceae	X		X		
Phaeocollybia pseudofestiva			X		
Phaeocollybia scatesiae	X		X		
Phaeocollybia sipei	X		X		
Phaeocollybia spadicea			X		
Uncommon Gilled Mushrooms					
Catathelasma ventricosa			X		
Cortinarius azureus			X		
Cortinarius boulderensis	X		X		
Cortinarius cyanites			X		
Cortinarius magnivelatus	X		X		
Cortinarius olympianus	X		X		
Cortinarius spilomius			X		
Cortinarius tabularis			X		
Cortinarius valgus			X		
Dermocybe humboldtensis	X		X		
Hebeloma olympiana	X		X		
Hygrophorus caeruleus	X		X		
Hygrophorus karstenii			X		
Hygrophorus vernalis	X		X		
Russula mustelina			X		
Rare Gilled Mushrooms					
Chroogomphus loculatus	X		X		
Cortinarius canabarba	X		X		
Cortinarius rainierensis	X		X		
Cortinarius variipes	X		X		
Cortinarius verrucisporus	X		X		

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.
[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).
[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Management for SEIS Special Attention Species (continued)

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Cortinarius wiebeae	X		X		
Tricholoma venenatum	X		X		
Uncommon Ecto-Polypores					
Albatrellus ellisii			X		
Albatrellus flettii			X		
Rare Ecto-Polypores					
Albatrellus avellaneus	X		X		
Albatrellus caeruleoporus	X		X		
Tooth Fungi					
Hydnum repandum [3]			X		
Hydnum umbilicatum			X		
Phellodon atratum			X		
Sarcodon fuscoindicum			X		
Sarcodon imbricatus			X		
Rare Zygomycetes					
Endogone arcogena	X		X		
Endogone oregonensis	X		X		
Glomus radiatum	X		X		
Saprobes (Decomposers)					
Uncommon Gilled Mushrooms					
Baeospora myriadophylla			X		
Chrysomphalina grossula			X		
Collybia bakerensis	X		X		
Fayodia gracilipes (rainierensis)			X		
Gymnopilus puntifolius	X		X		
Marasmius applanatipes	X		X		
Mycena hudsoniana	X		X		
Mycena lilacifolia			X		
Mycena marginella			X		
Mycena monticola	X		X		
Mycena overholtsii	X		X		
Mycena quinaultensis	X		X		
Mycena tenax			X		
Mythicomyces corneipes			X		
Neolentinus kauffmanii	X		X		
Pholiota albivelata	X		X		
Stagnicola perplexa			X		

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.
[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).
[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Management for SEIS Special Attention Species (continued)

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Rare Gilled Mushrooms					
Clitocybe subditopoda	X		X		
Clitocybe senilis	X		X		
Neolentinus adherens	X		X		
Rhodocybe nitida	X		X		
Rhodocybe speciosa	X		X		
Tricholomopsis fulvescens	X		X		
Noble Polypore (rare and endangered)					
Oxyporus nobilissimus [3]	X	X	X		
Bondarzewia Polypore					
Bondarzewia montana	X	X	X		
Rare Resupinates and Polypores					
Aleurodiscus farlowii	X		X		
Dichostereum granulosum	X		X		
Cudonia monticola			X		
Gyromitra californica			X	X	
Gyromitra esculenta [3]			X	X	
Gyromitra infula			X	X	
Gyromitra melaleucoides			X	X	
Gyromitra montana (syn. G. gigas)			X	X	
Otidea leporina			X		X
Otidea onotica			X		X
Otidea smithii	X		X		X
Plectania melastoma			X		
Podostroma alutaceum			X		
Sarcosoma mexicana [3]			X		X
Sarcosphaera eximia			X		
Spathularia flavida			X		
Rare Cup Fungi					
Aleuria rhenana	X		X		X
Bryoglossum gracile	X		X		
Gelatinodiscus flavidus	X		X		
Helvella compressa	X		X		
Helvella crassitunicata	X		X		
Helvella elastica	X		X		
Helvella maculata	X		X		
Neournula pouchetii	X		X		
Pithya vulgaris	X		X		
Plectania latahensis	X		X		
Plectania milleri	X		X		
Pseudaleuria quinaultiana	X		X		

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).

[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Management for SEIS Special Attention Species (continued)

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Club Coral Fungi					
Clavariadelphus ligula			X	X	
Clavariadelphus pistilaris			X	X	
Clavariadelphus truncatus			X	X	
Clavariadelphus borealis			X	X	
Clavariadelphus lovejoyae			X	X	
Clavariadelphus sachalinensis			X	X	
Clavariadelphus subfastigiatus			X	X	
Jelly Mushroom					
Phlogoitis helvelloides			X	X	
Branched Coral Fungi					
Clavulina cinerea			X	X	
Clavulina cristata			X	X	
Clavulina ornatipes			X	X	
Mushroom Lichen					
Phytoconis ericetorum			X	X	
Parasitic Fungi					
Asterophora lycoperdoides			X		
Asterophora parasitica			X		
Collybia racemosa			X		
Cordyceps capitata			X		
Cordyceps ophioglossoides			X		
Hypomyces luteovirens			X		
Cauliflower Mushroom					
Sparassis crispa [3]			X		
Moss Dwelling Mushrooms					
Cyphellostereum laeve			X		
Galerina atkinsoniana			X		
Galerina cerina			X		
Galerina heterocystis			X		
Galerina sphagnicola			X		
Galerina vittaeformis			X		
Rickenella setipes			X		
Coral Fungi					
Clavicorona avellanea			X		

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.
[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).
[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Management for SEIS Special Attention Species (continued)

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Lichens					
Rare Forage Lichen					
Bryoria tortuosa	X		X		
Rare Leafy (arboreal) Lichens					
Hypogymnia duplicata	X	X	X		
Tholurna dissimilis	X		X		
Rare Nitrogen-fixing Lichens					
Dendriscocaulon intricatulum	X		X		
Lobaria hallii	X		X		
Lobaria linita [3]	X	X	X		
Nephroma occultum	X		X		
Pannaria rubiginosa [3]	X		X		
Pseudocyphellaria rainierensis [3]	X	X	X		
Nitrogen-fixing Lichens					
Lobaria oregana [3]				X	
Lobaria pulmonaria [3]				X	
Lobaria scrobiculata [3]				X	
Nephroma bellum [3]				X	
Nephroma helveticum [3]				X	
Nephroma laevigatum [3]				X	
Nephroma parile				X	
Nephroma resupinatum [3]				X	
Pannaria leucostictoides				X	
Pannaria mediterranea				X	
Pannaria saubinetii [3]				X	
Peltigera collina [3]				X	
Peltigera neckeri				X	
Peltigera pacifica				X	
Pseudocyphellaria anomala [3]				X	
Pseudocyphellaria anthraspis [3]				X	
Pseudocyphellaria crocata [3]				X	
Sticta beauvoisii				X	
Sticta fuliginosa [3]				X	
Sticta limbata [3]				X	
Pin Lichens					
Calicium abietinum				X	
Calicium adaequatum				X	
Calicium adspersum				X	
Calicium glaucellum				X	

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).

[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Management for SEIS Special Attention Species (continued)

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Calicium viride				X	
Chaenotheca brunneola				X	
Chaenotheca chrysocephala [3]				X	
Chaenotheca ferruginea				X	
Chaenotheca furfuracea				X	
Chaenotheca subroscida				X	
Chaenothecopis pusilla				X	
Cyphelium inquinans				X	
Microcalicium arenarium				X	
Mycocalicium subtile [3]				X	
Stenocybe clavata				X	
Stenocybe major				X	
Rare Rock Lichens					
Pilophorus nigricaulis [3]	X		X		
Sticta arctica	X		X		
Riparian Lichens					
Cetrelia cetrarioides [3]				X	
Collema nigrescens				X	
Leptogium burnetiae var. *hirsutum*				X	
Leptogium cyanescens				X	
Leptogium saturninum				X	
Leptogium teretiusculum				X	
Platismatia lacunosa [3]				X	
Ramalina thrausta [3]				X	
Usnea longissima [3]				X	
Aquatic Lichens					
Dermatocarpon luridum	X		X		
Hydrothyria venosa	X		X		
Leptogium rivale	X		X		
Rare Oceanic Influenced Lichens					
Bryoria pseudocapillaris	X		X		
Bryoria spiralifera	X		X		
Bryoria subcana	X		X		
Buellia oidalea	X		X		
Erioderma sorediatum	X		X		
Hypogymnia oceanica	X		X		
Leioderma sorediatum	X		X		
Leptogium brebissonii	X		X		

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.
[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).
[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Management for SEIS Special Attention Species (continued)

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Niebla cephalota	X		X		
Pseudocyphellaria mougeotiana	X		X		
Teloschistes flavicans	X		X		
Usnea hesperina	X		X		
Oceanic Influenced Lichens					
Cetraria californica	X		X		
Heterodermia leucomelos	X		X		
Loxospora sp. nov. "corallifera" (Brodo in edit)	X		X		
Pyrrhospora quernea	X		X		
Additional Lichen Species					
Cladonia norvegica			X		
Heterodermia sitchensis			X		
Hygomnia vittiata			X		
Hypotrachyna revoluta			X		
Ramalina pollinaria			X		
Nephroma isidiosum			X		
Bryophytes					
Antitrichia curtipendula				X	
Bartramiopsis lescurii	X		X		
Brotherella roelli	X		X		
Buxbaumia piperi [3]					X
Diplophyllum albicans	X		X		
Diplophyllum plicatum	X	X			
Douinia ovata [3]				X	
Encalypta brevicolla var. *crumiana*	X		X		
Herbertus aduncus	X		X		
Herbertus sakurali	X		X		
Iwatsuklella leucotricha	X		X		
Kurzia makinoana	X	X			
Marsupella emarginata var. *aquatica*	X	X			
Orthodontlum gracile	X		X		
Plagiochila satol	X		X		
Plagiochila semidecurrens	X		X		
Pleuroziopsis ruthenica	X		X		
Ptilidium californicum	X	X			X
Racomitrium aquaticum	X		X		
Radula brunnea	X		X		
Rhizomnium nudum					X
Scouleria marginata				X	

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).

[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Management for SEIS Special Attention Species (continued)

Species	Survey Strategies[1] 1	2	3	4	Protection Buffers[2]
Tetraphis geniculata	X		X		X
Tritomaria exsectiformis	X	X			
Tritomaria quinquedentata	X		X		
Amphibians					
Larch Mountain salamander		X			
Mammals					
Red tree vole *(P. longicaudus)* [3]		X			
Mollusks					
Cryptomastix devia	X	X			
Cryptomastix hendersoni	X	X			
Monadenia fidelis minor	X	X			
Trilobopsis tehamana	X	X			
Deroceras hesperium	X	X			
Hemphillia malonei	X	X			
Prophysaon coeruleum	X	X			
Prophysaon dubium	X	X			
Juga (O.) n. sp. 2	X	X			
Vascular Plants					
Allotropa virgata [3]	X	X			
Arceuthobium tsugense [3]	X	X			
Aster vialis	X	X			
Botrychium minganense	X	X			
Botrychium montanum	X	X			
Coptis asplenifolia	X	X			
Coptis trifolia	X	X			
Corydalis aqua-gelidae [3]	X	X			
Cypripedium montanum (west Cascades)	X	X			
Arthropods					
Understory and forest gap herbivores				X	
Birds					
Black-backed woodpecker [3]					X
Great gray owl					X

[1] Survey Strategies: 1 = manage known sites; 2 = survey prior to activities and manage sites; 3 = conduct extensive surveys and manage sites; 4 = conduct general regional surveys.

[2] Protection Buffers are additional standards and guidelines from the Scientific Analysis Team Report for specific rare and locally endemic species, and other specific species in the upland forest matrix (see SEIS record of decision, page C-19).

[3] Species known to occur on BLM-administered lands in the Salem District.
Species with definitive information that they do not occur on the Salem District have been removed from the list.

Appendix B-2
Special Status Species–Animals

(As of March 1995)

Species	Status Category Federal[1]	State[2]	Occurrence[3]	Remarks
Federally listed, proposed, and candidates				
Birds				
American peregrine falcon	E	E	a	
Brown pelican	E	E	b	Coastal
Fish				
Oregon chub	E	SC	c	Occur in Finley National Wildlife Refuge North Fork Santiam River but not known to be on Salem District lands.
Mammals				
Columbian white-tailed deer	E	E	a	Columbia River bottoms
Birds				
Aleutian Canada goose	E	E	b	Coastal only
Bald eagle	T	T	a	
Marbled murrelet	T	SC	a	Coast Range
Northern spotted owl	T	T	a	
Western snowy plover	T	T	a	Coastal
Invertebrates				
Oregon silverspot butterfly	T	—	a	Coastal meadows; Mt. Hebo
Mammals				
Northern sea lion	T	SC	a	Coastal
Amphibians				
Cascades frog	C2	SC	c	Above 2,600 feet in Cascade Range
Foothill yellow-legged frog	C2	SU	a	Willamette River drainage
Larch Mountain salamander	C2	SV	a	Columbia River Gorge
Northern red-legged frog	C2	SU	c	
Southern torrent salamander	C1	SV		
Spotted frog	C1	SC	c	Formerly occurred
Tailed frog	C2	—	a	
Birds				
Harlequin duck	C2	SP	a	Rare
Mountain quail	3C	—	a	
Northern goshawk	C2	SC	a	Cascade Range
Tricolored blackbird	C2	SP	a	Rare; Willamette Valley
Little willow flycatcher	C2	—		
Fish				
Bull trout	C2	SC	c	Formerly occurred
Coastal coho	C2	—	a	Under review by NMFS; considered candidate species by BLM
Clackamas river coho	C2	SC	a	Under review by NMFS; considered candidate species by BLM

Appendix B-2 Special Status Species – Animals (March 1995) (continued)

Species	Status Category Federal[1]	State[2]	Occurrence[3]	Remarks
Federally listed, proposed, and candidates (continued)				
Fish (continued)				
Coastal steelhead	C2	—	a	Under review by NMFS; considered candidate species by BLM
Columbia/Willamette steelhead	C2	—	a	Under review by NMFS; considered candidate species by BLM
Invertebrates				
Beer's false water penny beetle	C2	—	c	5-15 miles east of Cascadia, Oregon
Beller's ground beetle	C2	—	c	Clackamas County
Cascades apatanian caddisfly	C2	—	b	Linn County; high elevation
Clatsop philocascan caddisfly	C2	—	b	Clatsop County
Fender's blue butterfly	C2	—	b	Prairie remnants in Willamette Valley; Kincaid's lupine is host plant
Goeden's lepidostoman caddisfly	C2	—	b	Lincoln County
Haddock's rhyacophilan caddisfly	C2	—	a	Marys Peak
Mt Hood farulan caddisfly	C2	—	b	Mt. Hood N.F., above 4,000-foot elev.
Mt. Hood primitive brachycentrid caddisfly	C2	—	b	Linn County; high elevation
Newcomb's littorine snail	C2	—	c	Marine
One-spot rhyacophilan caddisfly	C2	—	b	Mt. Hood, Lane County; high elevation
Oregon giant earthworm	C2	—	b	Willamette Valley
Roth's blind carabid beetle	C2	—	a	Lincoln and Marion Counties
Siskiyou caddisfly	C2	—	b	Willamette N.F.
Siskiyou chloealtis grasshopper	C2	—	c	Benton County
Tombstone prairie farulan caddisfly	C2	—	b	Linn County
Tombstone prairie oligophlebodes caddisfly	C2	—	b	Lane County
Vertree's ceraclean caddisfly	C2	—	b	Marion and Benton Counties, Willamette N.F.
Mammals				
North American lynx	C2	—		
California wolverine	C2	T	c	Cascade Range
Pacific fisher	C2	SC	c	
Pacific fringe-tailed bat	C2	SV	a	
Pacific western big-eared bat	C2	SC	a	One site in Clackamas Resource Area
White-footed vole	C2	SP	c	Coast Range
Long-earred myotis	C2	—		
Long-legged myotis	C2	—		
Yuma myotis	C2	—		
Reptiles				
Northwestern pond turtle	C2	SC	a	Willamette Valley, Columbia River
Bureau sensitive				
Invertebrates				
Willamette callippe fritillary butterfly	S	—		Willamette Valley

Appendix B-2 Special Status Species – Animals (March 1995) (continued)

Species	Status Category Federal[1]	State[2]	Occurrence[3]	Remarks
Bureau assessment				
Amphibians				
Clouded salamander	A	SC	a	
Cope's giant salamander	A	SC	a	Extreme northwest Oregon; Columbia River Gorge area
Oregon slender salamander	A	SC	a	Cascade Range
Tailed frog	A	SV	a	
Birds				
Barrow's goldeneye	A	SP	b	Uncommon migrant
Black swift	A	SP	b	Rare
Bufflehead	A	SP	b	Common migrant
Dusky Canada goose	A	SV	b	Willamette Valley, Columbia River; Coastal
Fork-tailed storm petrel	A	SV	b	Coastal
Great gray owl	A	SV	c	Cascade Range
Horned grebe	A	SP	b	Common migrant
Lewis' woodpecker	A	SC	a	Uncommon migrant
Northern saw-whet owl	A	--	a	
Pileated woodpecker	A	SC	a	
Purple martin	A	SC	a	Mainly coastal; a few populations in Coast Range
Three-toed woodpecker	A	SC	c	Cascade Range
Western bluebird	A	SV	a	
Fish				
Chum salmon	A	SC	a	Coastal; Columbia River
Invertebrates				
Hoary elfin butterfly	A	—	b	Coastal beaches; host plant is Kinnikinnick
Taylor's checkerspot butterfly	A	—	b	Prairie remnants in Willamette Valley
Valley silverspot butterfly	A	—	b	Marys Peak; violets are host plant
Mammals				
American marten	A	SC	a	Rare in Coast Range and north Cascade Range
Reptiles				
Painted turtle	A	SC	a	Willamette Valley south to Corvallis; Columbia River Gorge
Sharptail snake	A	SC	a	Willamette Valley

[1] E = Endangered; T = Threatened; P = Proposed; PE = Proposed Endangered; C2 = Taxa for which information now in the possession of the U.S. Fish and Wildlife Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat are not currently available to support proposed rules; 3C = Taxa that have proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat. If further research or changes in habitat indicate a significant decline in any of these taxa, they may be reevaluated for possible inclusion in categories 1 or 2;
S = Bureau Sensitive; A = Bureau Assessment

[2] E = Endangered; T = Threatened; SC = Sensitive Critical; SV = Sensitive Vulnerable; SP = Sensitive Peripheral or Naturally Rare

[3] a = Known to occur - breeds within planning area; b = Known to occur - migrates through or into planning area; c = Suspected to occur (historical records, no recent documented sightings).

NMFS = National Marine Fisheries Service

Sources: U.S. Department of the Interior, Fish and Wildlife Service 1993; Oregon Natural Heritage Program 1993.

Appendix C

Best Management Practices

(first section)

Timber Production Capability Classification Fragile Code Guidance

(second section)

Best Management Practices

The best management practices described in this document are intended to maintain or improve water quality and soil productivity, and prevent or mitigate adverse impacts while meeting other resource objectives. The best management practices are designed to provide compliance with the Clean Water Act of 1972, as amended in 1977 and 1987.

For proposed management actions, best management practices designed and implemented in accordance with a state approved process will normally constitute compliance with the Clean Water Act. The set of procedures prescribed by Oregon Forest Practice Act is the standard by which all forestry best management practices in Oregon are measured. The best management practices employed by BLM often are different in detail from the Oregon Forest Practice Act but must be equal or more protective of resources in terms of end results.

The iterative process by which nonpoint controls including best management practices are to be selected and implemented to achieve water quality standards include: (1) design of best management practices based upon site specific conditions, technical, economic and institutional feasibility, and the water quality of those waters potentially impacted; (2) monitoring to ensure that practices are properly designed and applied; (3) monitoring to determine: a) the effectiveness of practices in meeting water quality standards, and b) the appropriateness of water quality criteria in reasonably assuring protection of beneficial uses; and (4) adjustment of best management practices when it is found that water quality standards are not being protected to a desired level and/or possible adjustment of water quality standards based upon considerations in 40 Code of Federal Regulations 131.

Best management practices would be developed on a site-specific basis and consist of a mix of conservation practices such as those listed below and management guidance identified in chapter 2.

I. Timber Harvest

A. Cable Yarding

1. **On areas with high water tables, yard with full suspension or with one-end suspension on seasonally dry soils.**
2. **On areas with slopes exceeding 65 percent, yard with full suspension, one-end suspension using seasonal restrictions, or one-end suspension using a standing skyline with lateral yarding capacity. Yard remaining areas using one-end suspension.**
3. **Pile yarding debris on the landing to minimize the acreage around the landing impacted by intense burns or obstructed by heavy slash concentrations.**
4. **Hand water bar cable yarding corridors immediately after use on sensitive soils where gouging occurs.**
5. **When absolutely necessary to yard through riparian areas, restrict yarding in riparian areas to corridors that are perpendicular to streams. Management guidelines for corridors are:**

   a. Restrict corridors to the minimum number feasible.

b. Corridors will not exceed 50 feet in width nor reduce crown cover on a project stream segment to less than 75 percent of predisturbance conditions.

c. Logs will be fully suspended over water and adjacent banks.

B. Ground-Based Yarding

1. Use existing skid roads wherever possible.
2. Limit new skid roads to slopes less than 35 percent.
3. Use designated skid roads to limit areal extent of skid roads plus landings to less than 10 percent of the unit.
4. Restrict tractor operations to designated roads and limit operations to periods of low soil moisture, when soils have the most resistance to compaction (dry season).
5. In partial cut areas, locate skid roads where they can be used for regeneration harvest.
6. Till compacted roads, including skid roads from previous entries, with a properly designed self-drafting winged subsoiler.
7. Avoid tractor yarding on areas where soil damage cannot be mitigated.
8. Avoid placement of skid roads through areas of high water tables or where the skid roads would channel water into unstable headwall areas.
9. Water bar skid roads whenever surface erosion is likely.
10. Avoid use of wide track vehicles or more than one machine on a skid road at any given time to minimize the width of the skidroads. On multiple pass skid roads, wide track vehicles create in wider skid roads, and after multiple passes, drive the compaction deeper than a regular width track. However, they are good for one pass operations such as incidental scattered salvage or site preparation.
11. If timber harvesting activities will produce slash that covers the existing skid roads so they cannot be relocated, till prior to felling timber with a properly designed winged subsoiler.

C. Aerial Yarding

1. Use helicopter, balloon, or skyline yarding to avoid or minimize new road construction, or to provide complete suspension in sensitive watersheds.
2. Place landings away from watercourses to prevent petroleum products or other pollutants from entering the water.

II. Roads

A. Location

1. Locate roads on stable positions (e.g., ridges, natural benches, and flatter transitional slopes near ridges and valley bottoms). Implement extra mitigation measures when crossing unstable areas is unavoidable.
2. Avoid headwalls whenever possible.
3. Locate roads to minimize heights of cuts. Avoid high, steeply sloping cuts in highly fractured bedrock or deep soil.
4. Avoid wet areas by rolling the grade.
5. Avoid locating roads through areas where the geologic bedding planes or weathering surfaces are inclined with the slope.
6. Locate stream crossing sites where channels are well defined, unobstructed, and straight.

B. General Road Design Features

1. Road design standards and criteria are based on road management objectives such as traffic requirements of the project and the overall transportation plan, an economic analysis, safety requirements, resource objectives, and the minimization of damage to the environment.
2. Consider future maintenance concerns and needs when designing roads.
3. Preferred road gradients are 2 to 10 percent with a maximum sustained grade of 15 percent. Use steeper grades in those situations where they will result in less environmental impact. Avoid grades less than two percent.
4. Outsloping of the road prism for surface drainage is normally recommended for local spurs or minor collector roads where low volume traffic and lower traffic speeds are anticipated. It is also recommended in situations where long intervals between maintenance will occur and where minimum excavation is desired. Outsloping is not recommended on sustained gradients over 8-10 percent.
5. Insloping of the road prism is an acceptable practice on roads with gradients over 10 percent and where the underlying soil formation is very rocky and not subject to appreciable erosion or failure.
6. The traditional "crown" and "ditch" configuration is recommended for arterial and collector roads where traffic volume, speed, intensity and user comfort are a consideration. Gradients may range from 2 to 15 percent so long as adequate drainage away from the road surface and ditchlines is maintained.
7. Minimize excavation.
8. Locate stable waste disposal areas suitable for depositing excess excavated material.
9. Endhaul waste materials generated during road and ditch maintenance if side slopes exceed 60 percent or where unacceptable environmental damage may occur if sidecasting is used.
10. Where slopes have been overloaded, endhaul sidecast materials.
11. Provide for vegetative or artificial stabilization of cut and fill slopes in the design process.
12. Prior to completion of design drawings, field check the design to ensure that it fits the terrain, drainage needs have been satisfied, and all critical slope conditions have been satisfied.
13. Do not divert water directly into headwalls. Vary the grade or install cross drains to channel water away from headwalls. Check maintenance on existing roads to ensure water is not allowed to remain on the road and/or diverted into unstable headwall areas.
14. Unless a road is needed for future entry, use a temporary road and reclaim it after use, using methods such as blocking, ripping seeding, mulching, fertilizing, and water barring.
15. Minimize potential erosion on a road. If it is dirt surface, reclaim it; otherwise apply rock aggregate to minimize surface erosion.
16. Select landing locations on the basis of minimal excavation, erosion potential, or slope stability concerns.
17. Avoid landing locations alongside or in meadows, wetland areas, or other special habitat features.
18. Shape landings to direct surface water runoff to preselected spots where it can be dispersed to natural, well-vegetated, stable ground.

C. Design of Cross Drains

1. Design placement of all cross drains to avoid discharge onto erodible (unprotected) slopes or directly into stream channels. Provide a buffer or sediment basin between the cross drain outlet and the stream channel.
2. Locate culverts or drainage dips to avoid outflows onto unstable terrain such as headwalls, landslide features or block failure zones. Provide adequate spacing to avoid accumulation of water in ditches or surfaces through these areas.
3. Provide energy dissipators or armoring at cross drain outlets or drain dips where water is discharged onto loose material, erodible soil, or steep slopes.

4. Locate drainage dips where water might accumulate, or where there is an outside berm that prevents drainage from the roadway.
5. Use drainage dips and/or lead-off ditches in lieu of culverts on roads which have gradients less than 10 percent or where road management objectives result in blocking roads. Avoid drainage dips on road gradients over 10 percent.
6. Cut all cannon culverts to the proper length, downspout, and provide for energy dissipation if needed.
7. Design cross drainage culverts or drainage dips immediately upgrade of stream crossings to prevent ditch sediment from entering the stream.
8. Vary road gradients in erodible and unstable soils to reduce surface water volume and velocities, and the necessity for culverts.
9. Use slotted riser inlets in areas with highly erosive soils to prevent culvert plugging.

D. Design of Stream Crossings

1. Pipe arch culverts are appropriate on most fishery streams. Bottomless arch culverts and bridges will be necessary in some instances where gradients greater than five percent, stream discharge, and value of the fishery resource dictate that special engineering considerations are necessary to ensure uninterrupted fish passage. A round culvert may be suitable on streams where fish passage is not a concern.
2. Use the theoretical 100-year flood as design criteria for pipe arches or culverts.
3. Minimize the number of crossings on any particular stream.
4. Where feasible, design culvert placement on a straight reach of stream to minimize erosion at both ends of the culvert. Design adequate stream bank protection (e.g., riprap) where scouring could occur. Avoid locations requiring that the stream channel be straightened beyond the length of a culvert to facilitate installation of a road crossing.
5. Evaluate the advantages and disadvantages of a temporary versus permanent crossing structure. This evaluation should take into account economics, maintenance, and resource requirements for access to the area during all seasons over the long-term.
6. Reconstruct deteriorating or poorly built stream crossings with bridges or culverts, ensuring proper alignment and grade.
7. Increase the size of culverts to reduce the amount of highly erosive fill.
8. Low ford stream crossings are appropriate only when site conditions make it impractical or uneconomical to use a permanent or temporary crossing structure.

E. Construction

1. Limit road construction to the dry season (generally between May 15 and October 15). When conditions permit operations outside of the dry season, keep erosion control measures current with ground disturbance, to the extent that the affected area can be rapidly closed/blocked and weatherized if weather conditions warrant.
2. Manage road construction so that it can be completed and bare soil can be protected and stabilized prior to fall rains.
3. Confine construction of pioneer roads to within the roadway construction limits.
4. Conduct pioneer road construction to prevent undercutting the designated final cutslope as well as avoiding the deposition of materials outside the designated roadway limits.
5. Construct embankments out of appropriate materials (no slash or other organic matter) using one or more of the following methods:
   a. Layer placement (tractor compaction)
   b. Layer placement (roller compaction)
   c. Controlled compaction (85 to 90 percent maximum density).

6. Do not sidecast where it will adversely affect water quality or weaken stable slopes.
7. Install surface water drainage measures prior to fall rains.
8. Clear drainage ditches and natural water courses of woody material deposited by construction or logging upstream from culvert installations.
9. Confine major culvert installation from June 15 to September 15 to minimize sedimentation and the adverse effects of sediment on aquatic life.
10. For larger streams, divert streams around culvert installation work areas to minimize sedimentation during construction.
11. On streams with important fishery values, install the culvert as close to horizontal as possible (do not exceed 0.5 percent slope). Place culverts on larger nonfishery streams in the streambed at the existing slope gradient. Energy dissipators (e.g., large rock) placed at the outfall of culverts on small nonfishery streams are recommended to reduce water velocity and minimize scour at the outlet end.
12. Countersink culverts 6 to 8 inches below the streambed to minimize scouring at the outlet. Increase culvert diameters accordingly to minimize chances of plugging.
13. Confine activities by heavy equipment in the streambed to the area necessary for installation or removal of the structure. Restrict construction equipment to within the approved work area and out of the streambed.
14. Permanent stream crossing structures are recommended to be in place before heavy equipment moves beyond the crossing area. Where this is not feasible, install temporary crossings to minimize stream disturbance.
15. Place riprap on any fill material next to culvert inlets and outlets.
16. Where possible, limit the installation and removal of temporary crossing structures to once during the same year, and within the prescribed work period. Installation and removal should occur between June 15 and September 15 to minimize adverse effects of increased sediment on aquatic life.
17. Use rock that is as soil-free as possible with temporary culverts. Whenever possible, use washed river rock covered by crushed rock as a compacted running surface.
18. Spread and reshape clean fill material as close as possible to the original topography after a crossing is removed to keep the stream in its channel during high flow.
19. Limit activities of mechanized equipment in the stream channel to the area that is necessary for installation and removal operations.
20. Remove stream crossing drainage structures and in-channel fill material during low flow and prior to fall rains. Reestablish natural drainage configuration.
21. Use washed rock/gravel in a low water ford crossing if frequent use is anticipated. Surface the approaches with rock aggregate the approaches within 150 feet of each side of a low water ford to minimize washing and softening of the road surface.
22. Construct water bars on dirt roads, spur roads, and skid roads prior to fall rains.

F. Road Renovation/Improvement

1. Change flat gradients to a minimum of two percent or provide raised subgrade sections (turnpike) to avoid accumulation of surface water on the road prism.
2. Reconstruct unstable culvert catch basins to specifications. Reconstruction of catch basins in solid rock is not necessary if culvert entrance specifications are met.
3. Identify potential off-site water problems or excessive flows and add necessary drainage facilities.
4. Identify ditchline and outlet erosion caused by excessive flows and add necessary drainage facilities and armoring.
5. Replace undersized culverts and repair damaged culverts and downspouts.
6. Add additional full-round culverts, half-round culverts and energy dissipators as needed.

7. Correct special drainage problems (i.e., high water table, seeps) that affect stability of subgrade through the use of perforated drains, geotextiles, drainage bays, etc.
8. Eliminate undesirable berms that impair drainage away from the road prism.
9. Restore outslope or crown sections.
10. Avoid disturbing cutbanks while reconstructing ditches or catch basins.
11. Surface inadequately surfaced roads that are to be left open to traffic during wet weather.
12. Require roadside brushing be done in a manner that prevents disturbance to root systems (i.e., prohibit using excavators for brushing).
13. Revegetate all cut and fill slopes by seeding, fertilizing, hydromulching, netting, mulching, and/or planting native trees or shrubs.
14. Install stabilization features such as debris racks, binwalls, and rock blankets as needed.

G. Maintenance

1. Provide the basic custodial maintenance required to protect the road investment and to ensure that erosion damage to adjacent land and resources is held to a minimum. Give high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources.
2. Perform blading and shaping to conserve existing surface material and retain the original crowned or outsloped self-drainage cross section. Prevent or remove rutting berms (except those designed for slope protection) and other irregularities that retard normal surface runoff. Avoid dumping loose ditch or surface material over the shoulder where it would cause stream sedimentation or weaken landslide prone areas. Avoid undercutting of road cuts.
3. Keep road inlet and outlet ditches, catch basins and culverts free of obstruction, particularly before and during prolonged winter rainfall. Minimize routine machine cleaning of ditches during wet weather.
4. Promptly remove landslide material when it obstructs the road surface and ditchline drainage. Utilize the landslide material for needed road improvements elsewhere or dispose it in a stable waste area. Avoid sidecasting landslide material where it would overload embankments or natural slopes, or flow into downslope drainage courses.
5. Retain vegetation on cut slopes unless it poses a safety hazard or restricts maintenance activities. Accomplish roadside brushing by cutting vegetation rather than pulling it out and disturbing the soil.
6. Reclaim/revegetate all roads not needed for future management activities.
7. Revegetate bare cut and fill slopes.
8. Stabilize major slope failures (landslides) by subsurface drainage, rock blankets, or other methods.

H. Road Closures

1. Barricade or block road surface using gates, guard rails, earth/log barricades, boulders, logging debris or a combination of these methods. Avoid blocking roads that would need future maintenance (i.e., culverts, potential landslides, etc.) with unremovable barricades. Use guard rails, gates or other barricades capable of being opened for roads needing future maintenance.
2. Follow up on road closures to ensure they are maintained in accordance with design criteria.
3. Install water bars, cross sloping or drainage dips if not already on road to ensure drainage.
4. Till with a winged subsoiler. Mulch and/or seed for erosion control and site productivity restoration.

I. Water Source Development

1. Design and construct durable, long-term water sources.
2. Avoid reduction of downstream flow that would detrimentally affect aquatic resources, fish passage or other uses.

3. Direct overflow from water holding developments back into the stream.
4. Locate road approaches in instream water source developments to minimize potential impacts in the riparian zone. Surface these approaches with rock to reduce the effects of sediment washing into the stream.
5. Avoid use of road fills for water impoundment dams unless specially designed for that purpose.
6. Construct water sources during the dry season (generally between May 15 and October 15).

J. Restoration of Rock Quarries

1. Wherever possible, prior to excavation of the site, remove and stockpile topsoil for surface dressing to be used in the reclamation of the site.
2. Use seeding, mulching and drainage to minimize erosion.
3. Rip, water bar, block, fertilize and seed access roads to rock quarries where no future entry is planned. Reclaim depleted quarries to enhance other resource uses.

III. Silviculture

A. Riparian Enhancement

1. Plant conifer and woody riparian species in riparian areas where previous management activities have removed them. Placement of woody debris, creation of snag, or planting of conifers and riparian species would be used where appropriate to restore riparian conditions.
2. Convert suitable alder and brush riparian areas to conifers where water quality is limited. This will reduce nitrates and organic material, and provide new sources for future stream structure (woody debris).

B. Mechanical Methods

1. When using tracked equipment for site preparation, limit the use of such equipment to areas of less than 30 percent slopes.
2. Do not compact skeletal or shallow soils.
3. Till all compacted areas with a properly designed winged subsoiler. This could be waived if inspection reveals that less than two percent of the area is compacted. Compaction of less than two percent is considered to impair less than one percent growth loss.
4. On sites which do not annually dry out enough to provide resistance to traditional tracked equipment, use low-ground-pressure, track-type excavators. The narrow window for dry soils on these sites presents a high risk for impacts, as they do not offer the consistency needed for contract administration. These sites are located in the Udic moisture regime, which is dry less than 45 days within the four months following June, in six years out of ten.
5. Prohibit tractor operations or piling on areas with seasonally high water tables.
6. Restrict tractor operations to dry conditions with less than 25 percent soil moisture content in the upper six inches of soil.
7. Construct small diameter piles or pile in windrows.
8. Avoid piling large logs and stumps.
9. Pile small material (3 to 8 inches diameter size predominantly).
10. Burn piles when soil and duff moistures are high.
11. On soils with rocky surfaces, such as those coded as FSR1 in the Timber Production Capability Classification and those with identified low fertility levels, require excavators for mechanical site preparation, regardless of moisture limitations. These sites are highly sensitive to productivity loss from surface

disturbance and compaction. Tillage of the rocky soils (FSR1) is usually beyond equipment capability and will cause a further decrease in productivity due to mixing.

C. Chemical Methods

1. Refer to BLM 1992 Record of Decision Western Oregon Program - Management of Competing Vegetation.
2. Select areas for fertilization listed as Timber Production Capability Classification FNR (low nutrient).
3. Mitigate impacts from past practices (e.g., intense burns) through fertilization of affected areas.
4. Avoid aerial application of chemicals when wind speeds would cause drift.
5. Locate heliports and storage areas away from stream channels.
6. Allow no chemical loading operations or similar toxic pollutant activities within 200 feet of all water bodies.
7. Do not apply chemicals within 100 feet of perennial streams, or channels with beneficial uses(s) recognized by the state.
8. Do not apply chemicals into intermittent streams or channels without beneficial use(s) recognized by the state.

D. Broadcast Burning

1. An Oregon State Office guide (U.S. Department of the Interior, BLM 1982) describes a procedure to identify and place soils into three categories - highly, moderately, and least sensitive. These categories are based on the sensitivity of specific soils to impacts from burning:

   Category 1 - Highly sensitive soils
   - Soils less than 20 inches deep.
   - Soils with less than four inches of A horizon.
   - Granite and schist soils on slopes exceeding 35 percent.
   - Soils on slope gradients exceeding 70 percent.

   Category 2 - Moderately sensitive soils
   - Moderately deep and deep nonskeletal soils on southerly and westerly aspects with slopes less than 65 percent.
   - Moderately deep and deep skeletal soils.
     Granite and schist soils on slopes less than 35 percent.
   - Moderately deep and deep soils with ochric epipedons (light colored surface layers).

   Category 3 - Least sensitive soils
   - All soils not included in categories 1 and 2.

   The following is best management practices guidance for each category:

   Highly sensitive soils - avoid burning.

   Moderately sensitive soils - reduce disturbance, fire intensity and duration using the following methods:
   - Burn under conditions that create low intensity fires.
   - Burn when soils or duff are moist.
   - Limit use of tractors in fireline construction, and when used, to areas with less than 35 percent slopes. Construct water bars.
   - Avoid burning sparsely vegetated areas on slopes greater than 65 percent.
   - Gross yard to break up heavy slash concentrations.

   Least sensitive soils - burn by prescription and avoid hot burns.

   The BLM manual lists the following maximum desired percent bare soil exposed from burning for the three categories of soils: category 1 - 15 percent; category 2 - 30 percent; category 3 - 40 percent.

2. Fire Trails
   a. Use hand-constructed fire trails.
   b. Avoid the use of tractor-constructed fire trails on small units since the percentage of the area impacted is magnified by the unit's small size. Calculate the area compacted from yarding, landings and fire trails. Keep the impacted area to less than 12 percent.
   c. Construct tractor fire trails using a brush blade with one pass construction when the soil is dry. Make final clearing by hand.
   d. Where fire trail construction has caused compacted surfaces, till and waterbar fire trails. Use a properly designed winged subsoiler.
   e. Avoid placement of tractor-constructed fire trails on slopes greater than 35 percent.
   f. Avoid placement of any fire trails where water would be channeled into areas of instability or headwalls.
   g. Waterbar fire trails that may carry water to minimize surface erosion.

IV. Other Activities

A. Firewood

1. Apply a seasonal restriction on firewood cutting when access to cutting area is on an unsurfaced road.
2. Clean all road surfaces, ditches and catch basins of debris from wood cutting.

B. Wildfire Control

1. Limit use of heavy equipment near riparian areas and on steep slopes when possible. Where fire trail entry into a riparian area is essential, angle the approach rather than have it perpendicular to the riparian area.
2. Attempt to keep fire retardant out of water sources.
3. Utilize information from burned area surveys to determine if watershed emergency fire rehabilitation is needed.
4. Develop a fire rehabilitation plan through an interdisciplinary process.
5. Select treatments on the basis of on-site values, downstream values, probability of successful implementation, social and environmental considerations (including protection of native plant community), and cost as compared to benefits.
6. Examples of emergency fire rehabilitation treatments include: 1) seeding grasses or other vegetation as needed to provide a protective cover as quickly as possible; 2) mulching with straw or other suitable material; 3) fertilizing; 4) channel stabilization structures; 5) trash racks above road drainage structures; and 6) water bars on fire lines.

C. Watershed Rehabilitation and Fish Habitat Improvement Projects

1. Use an interdisciplinary team.
2. Use corrective measures to repair degraded watershed conditions. Restore to predisturbance conditions with a vegetative cover that will maintain or improve soil stability, reduce surface runoff, increase infiltration, and reduce flood occurrence and flood damages.
3. Carefully plan access needs for individual work sites within a project area to minimize exposure of bare soil, compaction and possible damage to tree roots. Utilize existing trails to the extent practical.
4. Confine work timing in stream channels in accordance with the memo from the Oregon Department of Fish and Wildlife (July 1986) Oregon guidelines for timing of in-water work to protect fish and wildlife resources.
5. Keep equipment out of streams to the extent possible.
6. Limit the amount of streambank to ensure stability of enhancement structures. Place excavated material above the high water mark to avoid its reentry to the stream.

7. Whenever possible, obtain logs for habitat improvement structures from outside the riparian zone or at least 200 feet from the stream channel to maintain integrity of riparian habitat and streambanks.
8. Inspect all mechanized equipment daily to help ensure toxic materials such as fuel and hydraulic fluid do not enter the stream.
9. Utilize water bars, barricades and seeding to stabilize bare soil areas.
10. Place woody debris in riparian areas and streams, create snags and plant conifers and woody riparian vegetation where previous management activities have removed them.
11. Design water source developments and improvements to protect riparian values.
12. Manage livestock use of riparian areas by fencing, other water source development, livestock numbers, and/or season of use.

D. Mining

1. Require the claimant to obtain all required state and federal operating permits.
2. Locate, design, operate and maintain sediment settling ponds in conformance with Oregon Department of Environmental Quality guidelines.
3. If possible, design, locate and construct stream crossings in conformance with practices described in sections II.D and II.E.
4. Use existing roads, skid trails and stream crossings whenever possible.
5. Adequate drainage of surface runoff will be necessary for roads that are constructed or reconstructed for vehicular access to the mining area. If roads are to be utilized during winter months (October 15 - April 15) surface the roads with rock.
6. Reclaim the mining area and access roads and trails at the conclusion of mining operations.
7. Construct a berm or trench between disturbed areas and water courses when needed to protect water quality.
8. Stockpile topsoil for use during reclamation of the site. In the interim, stockpiled topsoil must be stabilized to prevent erosion and contamination of other resources in the area.
9. If erosion is predicted to occur from October 15 to May 15, contour and mulch disturbed areas that will not be mined for at least 30 days.
10. If possible, retain an undisturbed riparian buffer strip between mining operations and water courses to protect integrity of streambanks, provide for water temperature control, and for filtration of sediment from surface runoff.
11. Whenever possible, confine operations to bench areas rather than allow encroachment on the stream.
12. Locate and maintain sanitation facilities in accordance with state and local regulations and district policies.

E. Wetlands

1. All wetlands destroyed by construction activities will be ameliorated by creating replacement wetland areas.
2. Avoid disturbance of permanent high water table areas.
3. Fall and yard timber away from wetlands.
4. Utilize seasonal restrictions or full suspension over areas when entry is required.
5. Avoid the use of tractors or other ground-based equipment that may disturb the wetlands.
6. Manipulate vegetation to enhance or create springs and wetland areas.

F. Municipal Watersheds

1. Cooperate with affected communities in the development and application of specific constraints and management actions designed to meet their particular needs. Additional protection could include:
   a. Seasonal and other restrictions on logging.
   b. Coordination and notification prior to surface disturbing actions.
   c. Review procedures.
   d. Sanitary precautions for woods workers.
   e. Restrictions on access.

Timber Production Capability Classification System

The Timber Production Capability Classification inventory is designed to identify sites capable of sustaining intensive timber management without degradation of their productive capacity. Factors such as soil depth, available moisture, slope, drainage, and stability are evaluated to determine the degree of timber management activity on a particular site. This would include sites capable of sustaining standard timber harvest practices, special practices or limitations to prevent degradation, and sites too fragile to tolerate any timber management without long-term loss of productivity. Legislative requirements and BLM policy specify that timber harvests will be planned and carried out only on lands which can be managed without environmental degradation of the site.

A complete description of the system can be found in BLM State Office Handbook 5251-1, Timber Production Capability Classification. This is available at the district office.

This section describes the fragile codes used in the Timber Production Capability Classification, identifies the concerns associated with each code, and recommends potential practices for management of such areas.

Timber Production Capability Classification Fragile Codes/ Guidance

Fragile Nonsuitable Woodland Soil Moisture (FSNW)

Soils on these sites are excessively well drained. Soils have a very low available water holding capacity and are subject to being dry for long periods during spring and summer months. Vegetation communities are primarily uneven-aged, open-grown Douglas-fir with a low vigor ground cover of salal. Soils typically have sandy or gravelly textures with coarse fragments consisting of more that 70 percent of the top 12 inches of the soil. Available water holding capacity is generally between 0.5 and 1 inch.

Concerns

Because of the limited soil resource, survival of newly planted vegetation is low. Any site disturbance severely reduces the future productivity potential. These losses cannot be mitigated even using best management practices.

Recommended Practices

Manage for nontimber uses.

Fragile Suitable Restricted Soil Moisture (FSR1)

Sites with thin light-colored topsoils and coarse, sandy or gravelly, often shallow soils with low moisture storage capacity. Available water holding capacity in the top 12 inches ranges from 1 to 1.5 inches.

Concerns

Because of low moisture supplying capacity and thin topsoil, soil displacement or compaction significantly

impacts the growth of biomass. Soil compaction or displacement further reduces the soil's ability to absorb and store moisture, reducing survival and growth of conifer seedlings.

Recommended Practices

- Avoid ground-based logging equipment.
- Avoid wet season yarding except with suspension of logs.
- Avoid scarification or tilling of soil.
- Avoid tractor-constructed fire trails.
- Burn slash only when fire intensity will be low (see burning guidelines).

Fragile Suitable Restricted Compaction (FSR2)

More than 12 percent of the area is compacted or the area was scarified and a high percentage of the topsoil is compacted and/or displaced.

Concerns

Soil compaction and displacement causes reduced survival and growth of planted conifers. Increased runoff and erosion may be occurring from the compacted surfaces.

Recommended Practices

- Till with properly designed winged subsoiler.
- Add organic matter to surfaces of displaced soil to improve productive potential.
- Where sites have been completely cleared of debris and topsoil, replace topsoil by dragging and respreading topsoil from piles or concentrations.
- Drain low spots or blocked drainages to improve natural drainage.
- Use nitrogen-fixing plants to enhance nutrient levels on severely disturbed sites.

Fragile Nonsuitable Woodland Nutrient (FNNW)

Soils on these sites are low in nutrients or have a nutrient imbalance that inhibits tree growth. Soils on this site are very gravelly or shallow, generally mapped with FSNW, or already produce less than 20 cubic feet per acre per year.

Concerns

Forest management activities reduce site productivity below the threshold level for commercial forest (20 cubic feet per acre per year).

Recommended Practice

Manage for nontimber uses.

Fragile Suitable Restricted Nutrient (FNR1)

Soils on this site are typically well to excessively drained. They occur primarily on ridges and ridge noses or steep (greater than 70 percent) convex hillslopes, at elevations typically above 2,800 feet (Salem District). Parent material is frequently volcanic tuff or breccia, and high in ash. Soils typically have thin topsoils. Organic matter turnover rates are slow and a high proportion of site nutrients is stored in the above ground biomass. Associated vegetation consists of primarily Pacific silver fir and noble fir with associated cold-tolerant understory species such as rhododendron and beargrass.

Concerns

The highest demand for plant nutrients occurs during the first 15 to 20 years after a plantation is established. Removal of nitrogen on sites already below optimum levels for growth would have an immediate impact on new plantations. While soil nutrients can be replaced after 80 to 100 years through natural precipitation, nutrients in deficient soils will not be available in sufficient quantities during the period of maximum need by the young stand of trees. Studies indicate that scarification and burning that cause high biomass removal on nutrient-deficient soils could have an immediate detrimental impact on growth.

Recommended Practices

- Avoid burning on these sites when possible. Usually plant competition is not a factor on low fertility sites (see burning guidelines).
- Avoid burning on steeper slopes and southerly aspects.
- Encourage nitrogen-fixing vegetation.
- Use fertilizer to increase nutrient levels.
- Avoid use of ground-based yarding equipment such as tractors and rubber-tired skidders.
- Avoid scarification and tractor slash piling.
- Plant and thin trees to wider spacings.
- Consider extended rotations.

Fragile Suitable Restricted Nutrient - Impacted From Past Management (FNR2)

Lower fertility sites impacted by yarding, scarification, or slash burns, resulting in lowered site productivity.

Concerns

Site productivity has been significantly reduced by loss of soil nutrients and organic matter.

Recommended Practices

- Encourage growth of nitrogen-fixing plants.
- Thin trees to wider spacings.
- Use chemical fertilizers to increase soil nutrients.

Fragile Suitable (very) Restricted Nutrient (FNR3)

Very slow-growing stands of Douglas-fir and hemlock at higher elevations. Understory includes low vigor rhododendron and beargrass.

Concerns

Any loss of soil nutrients from logging could shift these areas into a low site category.

Recommended Practices

- Use practices listed for Timber Production Capability Classification FNR1.
- Do not burn.
- Do not use ground-based equipment.
- Keep any soils disturbance to a minimum.

Fragile Nonsuitable Woodland Slope Gradient (FGNW)

Slopes greater than 80 percent adjacent to streams and in headwalls of drainages.

Concerns

Logging or road construction activity is likely to accelerate surface erosion and/or trigger slides or debris avalanches into streams.

Recommended Practices

- Manage for uses other than timber production with a primary emphasis on maintaining water quality.
- Avoid and buffer these sites whenever possible, especially if there are indicators of instability.
- If included in timber sale units, fall and yard away or use full suspension. Buffer the headwalls or streams.

Fragile Suitable Restricted Slope Gradient (FGR1)

Steep slopes of 70 to 80 percent adjacent to streams or in headwalls of drainages. Soils are shallow to moderately deep, noncohesive and gravelly.

Concerns

Logging or road construction may accelerate soil erosion, ravelling and sliding; may contribute to debris avalanches. When such materials enter streams, there are serious impacts to water quality and riparian (streamside) vegetation.

Recommended Practices

- Avoid placing roads in headwalls steeper than 70 percent or minimize sidecasting of excess road construction materials.
- Avoid practices that add water to headwalls or disrupt the natural drainage.
- Monitor culverts in high hazard areas during high runoff events.
- Avoid placement of new materials into slide areas.
- Direct road runoff into ditch lines by insloping or use of dips.
- Place downspouts on culverts where they discharge onto steep slopes.
- Yard logs using full suspension.

Fragile Nonsuitable Woodland Mass Movement Potential (FPNW)

These sites have active deep-seated slump-earthflow mass movements. Vegetation is primarily alder, bigleaf maple, Douglas-fir, and hemlock, with understories of vigorous swordfern, salmonberry, and other water-tolerant species. The trunks of many of the trees are commonly curved and leaning in various directions. Sites include areas (a) which are unproductive because the soils have been removed by past sliding, (b) where movement rates are rapid, precluding even shortened harvest rotations, or (c) where movement rates are resulting in jack strawed trees.

Concerns

Management activities could cause accelerated slope movement and slope failures. Because of the rapid rates of movement, forest management is not feasible on these sites.

Recommended Practices

- Avoid disturbance on these areas.
- Avoid unloading bottoms of slides.
- Avoid loading tops of slumps.
- Divert road drainage away from unstable areas.
- Evaluate unstable slopes and design measures to enhance their stability.

Fragile Suitable Restricted Mass Movement Potential (FPR1)

These sites occur primarily in undulating topography containing depressions and sag ponds. Parent material is primarily sedimentary rock associated with parallel bedding planes, with sills of diorite, or with tuff and breccia. Slopes of the slump scarp may be steep but the average hillslope is on gradients of less than 60 percent. Soils are typically deep and highly productive.

Vegetation varies depending on the depth to a water table ranging from Douglas-fir and salal to sag ponds with swordfern, oxalis, devils club, and associated water-tolerant species. Sites actively moving contain curved conifer stems and may contain tension cracks and sag ponds.

Concerns

These sites are subject to slow mass movement. Any practice that increases weight or soil pore pressure, or reduces support at the toe, accelerates movement. Runoff from compacted soil on roads and skid trails that diverts water into unstable areas is a common cause of increased instability.

Recommended Practices

- Avoid unloading bottoms of slides.

- Avoid loading tops of slumps.
- Divert road drainage away from unstable areas.
- Maintain or reestablish natural drainage after harvest operations.
- Evaluate unstable slopes and design measures to enhance their stability.

Fragile Nonsuitable Woodland Surface Erosion Potential (FMNW)

Sites that occur on slopes greater than 90 percent not adjacent to streams or headwalls. The coarse, usually somewhat shallow soil is moving downslope, accumulating on the upper sides of trees and other obstacles.

Concerns

The disturbance from timber harvest or slash burning increases surface erosion to a greater rate. This creates unacceptable losses in potential productivity.

Recommended Practices

Manage for uses other than timber production with the primary emphasis on erosion control, watershed and other nontimber uses.

Fragile Suitable Restricted Surface Erosion Potential (FMR1)

Sites with steep, convex (upper) sideslopes of 70 to 90 percent. Parent materials are primarily thick-bedded sandstone, marine basalt, or andesite. Soils typically have shallow, gravelly, thin topsoils. Vegetation is primarily drought-tolerant Douglas-fir with an understory of Oregon grape, salal, and/or rhododendron.

Concerns

Disturbances from logging and slash burning create increased dry ravelling of soil, losses of soil nutrients, and covering of newly planted seedlings.

Recommended Practices

- Use full log suspension when feasible. Otherwise, employ one-end suspension during dry soil conditions, or use an energized carriage with lateral yarding capabilities. Minimize the amount of the area impacted by cable yarding skid trails.
- Avoid burning to maintain vegetative cover and the duff layer.
- Leave large cull logs on the unit to help impede soil movement.
- Encourage nitrogen-fixing plants.
- Consider grass or forb seeding on disturbed areas where moisture is not a limiting factor.

Fragile Nonsuitable Woodland Ground water (FWNW)

Very poorly drained areas, with water at the surface for much of the year. Vegetation includes scattered alder and cottonwood with an understory of salmonberry, skunk cabbage, sedges or rushes, and devils club.

Concerns

Commercial conifer trees are unable to survive on these sites except on scattered hummocks or mounds with better drainage. The high water table makes it easily damaged by timber management or other activities.

Recommended Practices

Manage for uses other than timber production with primary emphasis on water quality and wildlife.

Fragile Suitable Restricted Ground water (FWR1)

Very moist, poorly drained sites. Usually in depressions or adjacent to streams or unstable areas where the water table is near the surface much of the year. Vegetation is dominated by alder and western hemlock overstories, and oxalis, vine maple, and swordfern understories. Salmonberry and devils club are minor components.

Concerns

These sites may contain water-tolerant species, but removal of trees could reduce transpiration rates. Yarding

may disrupt surface water flows. This can raise the water table and increase the time in which soils are wet. This, in turn, could reduce production, increase competition of unwanted vegetation, and change the adapted species.

Recommended Practices

- Minimize practices that disrupt natural drainage, such as dragging logs through wet areas or leaving skid trails that block natural drainage.
- Avoid use of ground-based logging equipment when soils are wet.
- Avoid scarification.
- Seed ground cover to reduce invasion of water-tolerant vegetation.
- Plant species adapted to the site, such as western hemlock, western redcedar, or alder. Avoid planting Douglas-fir.

Appendix D
Silvicultural Systems and Harvest Methods

General Forest Management Area

Silvicultural systems in the General Forest Management Area would be designed to promote production of merchantable timber, while retaining some larger trees and snags and maintaining forest health and productivity. All treatments would be compatible with the ecological requirements of the communities of native plant and animal species present, and would be tailored to the condition of each stand. The results of watershed analysis would be used to help select and design silvicultural systems through better understanding of landscape-level patterns and ecological processes.

The quality of wood, value of logs ultimately produced, and economic efficiency would be important considerations for all planned treatments.

Lands available for harvest would be managed generally as even-aged stands with partial overstories of larger trees. Management actions would consist of six general types of treatments: regeneration harvest with partial retention; site preparation following harvest; reforestation treatments; management of young stands; commercial thinnings in mid-aged stands; and management of overstory trees, snags, and large woody debris. Each of these treatments is described below.

Silvicultural Treatments

Regeneration Harvest Regeneration harvests on available forest lands would generally occur in stands at or above the age of the culmination of mean annual increment. On the Salem District, this varies from stand age 70 to 110 years. Regeneration harvest would not be planned for stands less than 60 years of age.

Site Preparation Following regeneration harvest, residual vegetation and logging debris would be treated if necessary to reduce fire hazard, provide room for planting of tree seedlings, lessen initial competition from other vegetation, and limit the cover for seedling-damaging rodents. Methods used would include prescribed fire, manual cutting and piling, and mechanical clearing.

Reforestation Normally, all sites that receive regeneration harvest and do not require burning would be reforested within one year of cutting. If slashing and/or burning is required to prepare site for planting, reforestation may be delayed beyond one year pending burn prescriptions and smoke management clearance. Most areas would be planted with seedlings grown from genetically-selected seed. The selection of tree species, planting density, and stock types would depend on site characteristics, the composition of the original stand, and projected future management of each stand. Areas having identified root disease would be planted with species resistant or immune to the disease or in a manner that would reduce the likelihood of spreading the disease.

Management of Young Stands During the first ten to fifteen years after planting, young stands would receive treatments as necessary and as funding allows to promote establishment, survival, and growth by managing competing vegetation, protecting seedlings from severe local site conditions, and preventing excessive animal damage. These treatments would include manual cutting of brush and seedling protection measures such as placement of plastic mesh tubes on seedlings and trapping of rodents.

Suitable stands aged 10 to 20 years would receive treatments designed to improve growth, value, and wood quality, when funding is available. These treatments include precommercial thinning, release, pruning, and fertilization.

Commercial Thinnings Stands approximately 30 to 70 years of age would be considered for commercial thinning potential. One or two thinnings may be scheduled over the life of an individual stand.

The objectives of commercial thinning may include one or more of the following: to increase the proportion of merchantable volume in the stand, to produce larger, more valuable logs, to anticipate mortality of small trees as the stand develops, to maintain good crown ratios and stable, windfirm trees, to accelerate development of trees which can later provide large-diameter snags and down logs, to manage species composition, or to promote development of desired understory vegetation. Nitrogen fertilizer may be applied following completion of thinnings.

In any case, the decision to thin any given stand would depend on site-specific factors such as slope and topography, distance to roads, soil types, stand density, species composition, and average tree diameter.

Management of Overstory Trees, Snags, and Large Woody Debris During partial-cut or regeneration harvests, existing snags would be reserved from cutting whenever feasible, to the extent necessary to meet snag habitat objectives. Some snags may need to be removed, however, for road construction, for safety reasons, or to make way for log yarding in some situations. The large trees reserved from regeneration harvest would normally not be considered available for future harvest. Some may be damaged or killed during slash burning, while others may blow down or break off during windstorms. Such trees would then become part of the supply of snags and large woody debris. Many of the reserved trees would be likely to survive and grow, providing additional structural and functional habitat diversity as younger stands develop beneath them. Some of the trees reserved for snag recruitment may be topped, girdled, or felled over time to help meet long-range goals for snags and large woody debris.

Selection of Harvest Areas

Regeneration Harvest For available forest lands, treatment areas would be selected when feasible from the least productive stands first. Stands which appear to have low stocking, damage, disease, generally low growth rates, or a predominance of noncommercial species resulting from past management would receive higher priority for harvest.

Commercial Thinning Treatment areas would be selected from well-stocked or overstocked stands where density reduction is needed to maintain good diameter growth rates, live crown ratios, and stand stability. Selection of thinning areas may depend on access and logging feasibility.

Landscape Design

Harvest units, including regeneration harvest and commercial thinnings, would be placed where needed to meet landscape objectives on three levels of scale: the physiographic province; the landscape block or watershed; and the stand.

Regeneration Harvest Design

Silvicultural prescriptions for regeneration harvest would be based on knowledge of plant communities, successional relationships, and ecosystem functions. Knowledge of these relationships would be used to help prevent vegetation management problems before they occur. Harvest plans would provide for maintenance of long-term site productivity and forest health.

Regeneration harvest units would vary in size, depending on factors such as ownership, topography, and road locations. Appropriate treatment areas would be determined through watershed analysis.

Harvest unit shapes would be irregular, conforming where possible to topographic features, but limited in many cases by logging feasibility, ownership boundaries, reserve boundaries, other land use allocations, etc. An average of six to eight live trees per acre would be reserved from harvest, as clumps, strips, and scattered individual trees. The distribution of reserved trees would be designed to help meet habitat goals and to minimize interference with log yarding.

In addition to the previous green tree retention management action/direction, green trees would be retained for snag recruitment in timber harvest units where there is an identified, near-term (less than three decades) snag deficit. These trees do not count toward green tree retention requirements.

Partial-cut Harvest Design

Commercial thinnings would generally be designed to maintain good volume productivity of the stand. To accomplish this, a stand might be thinned before relative density exceeds 0.60, leaving a residual relative density of approximately 0.40. Depending on stand age, tree size, and the specific objectives of the thinning, stand density after thinning would range from approximately 70 to 110 trees per acre.

Commercial thinning treatment areas would vary in size, depending on factors such as operability and site conditions. Appropriate treatment areas would be determined through watershed analysis. A variety of thinning intensities may be designated within a treatment unit in order to reflect current within-stand spatial patterns or to meet stand development objectives.

In some portions of stands, thinning may consist only of removal of the smaller (intermediate and suppressed) trees in the stand. In other areas, many of the larger codominant and dominant trees may also be removed.

Where root diseases such as laminated root rot (*Phellinus weirii*) and black stain (*Ceratocystis verticicladiella*) are present in stands to be thinned, the thinning will incorporate state-of-the-art recommendations for treatment. Openings created will be planted with seedlings of species resistant or immune to the disease, or in a manner to reduce the rate of disease spread.

Connectivity/Diversity Blocks

Silvicultural systems in the Connectivity/Diversity Blocks would be designed to promote development of late-successional forest structure within a longer rotation, while providing an output of merchantable timber and maintaining forest health and productivity. All treatments would be compatible with the ecological requirements of the communities of native plant and animal species present, and would be tailored to the condition of each stand. The results of watershed analysis would be used to help select and design silvicultural systems through better understanding of landscape-level patterns and ecological processes.

The quality of wood, value of logs ultimately produced, and economic efficiency would be important considerations for all planned treatments.

Lands available for harvest would be managed generally as even-aged stands with substantial overstories of larger trees. Management would consist of six general types of treatments: regeneration harvest with partial retention; site preparation following harvest; reforestation treatments; management of young stands; density management thinnings in mid-aged stands; and management of overstory trees, snags, and large woody debris. Each of these treatments is described below.

Silvicultural Treatments

Regeneration Harvest Regeneration harvests on available forest land would be planned for a 150-year rotation. On the Salem District, portions of some stands would be cut at stand ages as low as 60 years during the first decade, where older stands are not available or to develop a better distribution of age classes over time. In the second and succeeding decades, regeneration harvest would not be planned for stands less than 70 years of age.

Site Preparation Following regeneration harvest, sites would receive treatment of understory vegetation and logging debris if necessary to reduce fire hazard, provide room for planting of tree seedlings, lessen initial competition from other vegetation, and limit the cover for seedling-damaging rodents. Methods used would include prescribed fire (underburning), machine piling, and manual cutting.

Reforestation Normally, all sites that receive regeneration harvest and do not require burning would be reforested within one year of cutting. If slashing and/or burning is required to prepare sites for planting, reforestation may be delayed beyond one year pending smoke management clearance. The selection of tree species, planting density, and stock types would depend on site characteristics, the composition of the original stand and remaining overstory, projected future management of each stand, and distribution of root disease infection. Harvested areas having identified root disease would be planted with species resistant or immune to the disease, or in a manner that will reduce spread of the disease.

Management of Young Stands During the first 10 to 15 years after planting, understory stands would receive treatments as necessary and as funding allows to promote establishment, survival, and growth by managing competing vegetation, preventing excessive animal damage, and managing overstory density. These treatments would include manual cutting of brush and seedling protection measures.

Suitable stands aged 10 to 20 years may receive treatments designed to improve growth, value, and wood quality, when funding is available. These treatments may include release, precommercial thinning, and pruning.

Density Management Thinnings Stands approximately 30 to 110 years of age would be considered for density management thinnings. An individual stand may be thinned three to four times at intervals of 20 to 30 years, within one 150-year rotation.

The purposes of density management may include one or more of the following: to accelerate growth of trees which would later provide large-diameter snags and down logs; to promote development of understory vegetation and multiple canopy layers; to produce larger, more valuable logs; to harvest mortality of small trees as the stand develops, to maintain good crown ratios and stable, windfirm trees; and to manage species composition.

The decision to thin a particular stand would depend on site-specific factors such as slope and topography, distance to roads, soil types, stand density, species composition, average tree diameter, and degree of structural variability in the stand.

Management of Overstory Trees, Snags, and Large Woody Debris During partial-cut or regeneration harvests, existing snags would be reserved from cutting whenever feasible to the extent necessary to meet snag habitat objectives. Some snags would need to be removed, however, for safety reasons, for road construction, or to make way for log yarding in some situations.

The large trees reserved from regeneration harvest would not normally be considered available for future harvest. Some may be damaged or killed during slash burning, while others may blow down or break off during windstorms. Such trees would become part of the supply of snags and large woody debris. Most of the reserved trees would be likely to survive and grow, providing substantial structural and functional habitat diversity as the canopies of younger stands develop beneath them.

Some of the trees reserved for snag recruitment may be topped, girdled, or felled over time to help meet long-range goals for snags and large woody debris.

Selection of Harvest Areas

Regeneration Harvest Treatment areas would be selected from mature stands having the least degree of late-successional forest structure. In addition, the more productive stands would be deferred so that the less productive stands would be harvested first, when feasible. Stands which appear to have low stocking, damage, disease, generally low growth rates, or a predominance of noncommercial species resulting from past management would receive higher priority for harvest.

Density Management Thinnings Treatment areas would be selected from well-stocked stands where density reduction is needed to promote development of late-successional forest structure. This would generally be stands which are predominantly even-aged, evenly spaced, and of a fairly uniform diameter and height. Selection of thinning areas would also depend on access and logging feasibility.

Landscape Design

Harvest units, including regeneration harvest and density management thinnings, would be placed where needed to meet landscape objectives on three levels of scale: the physiographic province; the landscape block or watershed; and the stand.

Regeneration Harvest Design

Silvicultural prescriptions for regeneration harvest would be based on knowledge of plant communities, successional relationships, and ecosystem functions with consideration of forest health. Knowledge of these relationships would be used to help prevent vegetation management problems before they occur. Harvest plans would provide for maintenance of long-term site productivity and forest health.

Regeneration harvest units would vary in size, depending on factors such as ownership, topography, and road locations. Appropriate treatment areas would be determined through watershed analysis.

Harvest unit shapes would be irregular, conforming where possible to topographic features, but limited in many cases by logging feasibility and ownership boundaries. An average of 12 to 18 live trees per acre would be reserved from harvest, as clumps, strips, and scattered individual trees. The distribution of reserved trees would be designed to help meet habitat goals and to minimize interference with log yarding.

Partial-cut Harvest Design

Density management thinnings would generally be designed to encourage rapid development of vertical and horizontal stand diversity. To accomplish this, a stand might be thinned before relative density exceeds 0.55, leaving a residual relative density of approximately 0.35. Patches of denser forest would be retained in some places to meet particular wildlife habitat criteria. Depending on stand age and the specific objectives of thinning, stand density after thinning may range from approximately 50 to 120 trees per acre. Density management areas would vary in size, depending on factors such as operability and site conditions. Appropriate treatment areas would be determined through watershed analysis. A variety of treatment intensities may be designated within a thinning unit in order to reflect current within-stand spatial patterns or to meet stand development objectives.

For example, some dense patches of perhaps one-quarter acre to several acres may be reserved from cutting. Other patches of one-half to one acre may be completely removed as group selections, and those areas planted with tree seedlings after the thinning is completed. Group selection patches larger than one acre in size would contain reserved trees and snags as provided in regeneration harvest units.

In each density management thinning entry, some of the larger codominant and dominant trees would be removed.

Where root diseases such as laminated root rot (*Phellinus weirii*), black stain (*Ceratocystis verticicladiella*) or Port-Orford-cedar root rot (*Phytophthora lateralis*) are present in stands to be thinned, the thinning will incorporate state-of-the-art recommendations for treatment. Openings created will be planted with seedlings of species resistant or immune to the disease, or in a manner to reduce the rate of disease spread.

Late-Successional Reserves

Forest stands less than 80 years of age within most Late-Successional Reserves would be considered for silvicultural treatments where stocking, structure, or composition are expected to prevent or significantly retard development of late-successional conditions. In Late-Successional Reserves within the Northern Coast Range Adaptive Management Area, forest stands up to and including 110 years of age could be considered for silvicultural treatments. Such stands would generally be composed of trees less than 10 to 20 inches diameter at breast height, and would show no significant development of a multiple-canopy forest structure. Stands that have desired late-successional structure or that will soon develop it would not be treated unless such treatment is necessary to accomplish risk-reduction objectives (as described below).

Silvicultural Treatments

Density Management Density management prescriptions would be designed to produce stand structure and components associated with late-successional conditions, including large trees, snags, logs, and variable-density, multistoried, multispecies stands. By removing a portion of the stand, the remaining trees would be provided room to maintain or increase diameter growth rates. In addition, openings in the canopy would permit development of an understory of seedlings and saplings and other vegetation. Some of the overstory trees may be converted to snags over time, to help meet snag habitat targets, or felled to provide large woody debris. Trees cut but surplus to habitat needs would be removed for commercial use.

A wide variety of silvicultural practices would be employed, rather than relying on a limited variety of techniques. Silvicultural activities would be conducted in suitable stands, whether the action would generate a commercial return or not.

In general, manipulated acreage would be limited to five percent of the total area in any Late-Successional Reserve in the initial five-year period of implementation unless the need for larger-scale actions is explicitly justified.

Reduction of Large-scale Disturbance Risk

In some areas, stands would be made less susceptible to natural disturbances by focusing salvage activities on reduction of catastrophic insect, disease, and wildfire threats, and by designing treatments to provide effective fuel breaks wherever possible. These treatments would be designed so that they would not result in degeneration of currently suitable spotted owl habitat or other late-successional conditions.

Treatments would be implemented to reduce risk in older stands if the proposed management activity would clearly result in greater assurance of long-term maintenance of habitat; is clearly needed to reduce risks; and would not prevent Late-Successional Reserves from playing an effective role in attaining the objectives for which they were established.

Unless exempted from review, proposed risk reduction projects would be submitted to the Regional Ecosystem Office.

Riparian Reserves

Some stands within Riparian Reserves would be considered for silvicultural treatments if they do not prevent or retard attainment of Aquatic Conservation Strategy objectives. Watershed analysis would be completed prior to any treatments.

Density Management Where portions of young, even-aged conifer plantations are located within the Riparian Reserves, these stands would be considered for density management treatments. The objectives of such treatment would be to promote development of large conifers and to improve diversity of species composition and stand density. Merchantable logs would be removed only where such action would not be detrimental to the purposes for which the Riparian Reserves were established.

Conifer Underplanting Where hardwood stands dominate streamside areas and there is a lack of large conifers to provide inputs of large wood for instream structure, efforts would be made to reestablish scattered conifers within the Riparian Reserve. This would involve cutting or girdling some hardwoods to create openings in the canopy, followed by cutting of brush and planting of a variety of conifer seedlings in the openings created. In most cases, follow-up stand maintenance treatments would be necessary to ensure successful establishment of an adequate number of conifers in the riparian area.

Appendix E
The Forest Genetics Program

Introduction

For thousands of years and for a number of beneficial uses, humans have selected from the genetic variation that is naturally present in plants and animals. Modern agricultural programs have increased yields and productivity through selection and breeding. The need for food production and natural resources is increasing as the human population grows. Genetics programs will continue to help meet these demands.

The genes in all organisms are the basis of their diversity. Genetic diversity is a key component of ecosystems. Broad genetic variability provides a buffer against change. Genetic uniformity decreases resilience to change and increases the potential for problems caused by pests and diseases. The physical characteristics of an organism result from the interaction of its genes with the environment. Ecosystems are dynamic communities that change over time. Species with wide tolerances can adapt to changes, while those with narrow tolerances can be heavily impacted. Genetic material from wild stock is an important source of variability that can be infused into existing improved varieties. Many medicinal compounds are derived from plants and there is the potential for more undiscovered uses. Conserving genetic diversity for all species allows evolutionary processes to continue within the conditions of the natural environment.

Tree improvement is the application of genetic principles and methods to the culture of forest tree species. Many desirable traits in trees can be enhanced with tree improvement. The BLM has participated in cooperative tree improvement programs for forest trees in the Pacific Northwest since the late 1950s. The emphasis has been in improvement of tree growth and disease resistance. Ecosystem management principles are changing the focus of the tree improvement program. The existing tree improvement and seed orchard programs will be integrated into a broader based forest genetics program. A forest genetics program is consistent with ecosystem management principles and can be expanded to cover the genetics of other plants and animals.

The remainder of this appendix describes the objectives, the present status, and the proposed direction of the forest genetics program. Readers interested in technical details of the program are referred to the *BLM Western Oregon Tree Improvement Plan* (U.S. Department of the Interior, BLM, OSO 1987a). Additional information on genetic resource issues can be found in *The Value of Genetic Resources* (Oldfield 1984) and *Genetics and Conservation of Rare Plants* (Falk and Holsinger 1991).

Program Objectives

Objectives of the forest genetics program underlay a broad spectrum of land management activities. The biological foundation of ecosystem management rests upon a clear understanding of the genetic diversity present within the system. The following objectives are broadly defined and include tree improvement, gene management, and gene conservation activities:

- provide seed production for planting species on BLM-administered lands and develop seed collection and seed deployment guidelines;
- develop genetically improved materials to meet BLM's resource management objectives;
- maintain and restore the genetic diversity within managed forest stands;
- analyze needs and carry out gene conservation strategies;
- collect information on genetic variation from important species;
- contribute to the development of genetic information needed for watershed analysis, ecological assessments, research studies and ecosystem management projects; and
- maintain flexibility within the program so that information meets current needs and anticipates future needs.

Status of Existing Program

The BLM tree improvement program has generated a substantial and important genetic information base for several conifer species. The data is significant to ecosystem management because it describes the nature and extent of genetic variation present for selected traits of each species.

Genetic diversity is continuous across the landscape and tree improvement programs are implemented at this level. Each program is focused on a small ecologically similar area called a breeding unit. Most tree improvement programs are cooperatives involving BLM and other forest land owners. A cooperative structure is beneficial because it increases the number of trees in the genetic base and the trees are located across a broader geographic area. Program costs are shared among cooperators which is more efficient. BLM is cooperating in more than fifty breeding units which include several million acres of forest land in Western Oregon.

The following accomplishments summarize the status of the program:

- Several conifer species (Douglas-fir, western hemlock, noble fir, western white pine, and sugar pine) have been selected for genetically controlled characteristics such as growth rate, tree form and resistance to disease;
- Test plantations have been established using progeny of the selected trees. Tree growth on these progeny test sites has been measured at regular intervals;
- Seed orchards have been established using parent trees and are producing locally adapted seed for conifer species including Douglas-fir, western hemlock, noble fir, western red cedar, ponderosa pine, grand fir, and incense cedar;
- Each year improved seed has been sown for replanting a portion of harvested forest acres;
- Seed orchards are managed for seed production, including stimulation techniques to encourage cone production and removal of trees representing progeny that demonstrate slow growth in field tests or show undesirable characteristics (this practice is known as “roguing”);
- Second generation programs have been initiated in some breeding units with selection and breeding work underway; and
- Facilities for cone and seed processing and greenhouses for growing custom tailored lots of many species have been established at the seed orchards.

Proposed Program Direction

The future forest genetics program will be more complex under ecosystem management than under the previous management plans. Improvement of growth and disease resistance will continue as important components of the forest genetics program. Gene conservation and gene resources management issues will receive more emphasis. Gene conservation refers to specific actions taken to conserve the genetic variation of species. The purpose is to maintain the range of natural genetic diversity within the species. Gene management refers to the integration of genetic principles into resource management actions.

The following is a summary of future direction for the forest genetics program:

- progeny test sites will be maintained, measurements of growth and other characteristics will continue, and long-term management plans for the sites will be developed;
- seed orchards will be maintained and managed to produce seed for ecosystem management projects;
- improved stock will be planted on a portion of harvested acres;
- tree improvement programs, which have emphasized cooperative efforts for operational programs and research studies with state, private, and other government agencies, will continue;
- genetic expertise and genetically appropriate guidelines will be provided for development of ecosystem management projects; and
- a forest genetics plan will be prepared, including strategies for gene conservation, maintenance of genetic diversity, and definition of monitoring baselines to quantify existing genetic variation within individual species.

Ecosystem management concepts have challenged the forest genetics program with more issues than were faced in previous forest management plans. The former tree improvement program must be meshed with the additional needs defined by ecosystem management so that previous gains are maintained and future needs are addressed. Because policy and land use allocations are likely to change over time, a flexible, broad-based forest genetics program will be an essential tool to accommodate changing conditions.

Appendix F
Restrictions on Mineral and Energy Exploration and Development Activity

Introduction

This appendix discusses the oil and gas leasing program and stipulations which would be applied to BLM-administered lands as appropriate under the resource management plan. Operating standards pertinent to locatable and salable minerals are also described. Mineral exploration and development on federal lands must also comply with laws and regulations administered by several agencies of the state of Oregon.

Leasable Mineral Resources

Geothermal and Coal

See chapter 2, Energy and Minerals.

Oil and Gas

The Mineral Leasing Act of 1920 (as amended) provides that all publicly owned oil and gas resources be open to leasing unless a specific land order has been issued to close the area. Through the land use planning process, the availability of these resources for leasing is analyzed, taking into consideration development potential and surface resources. Constraints on oil and gas operations are identified and placed in the leases as notices and stipulations. Oil and gas leases are then issued from the BLM Oregon State Office in Portland. Specific notices and stipulations are described in the pages to follow.

The issuance of a lease conveys to the lessee an authorization to actively explore and/or develop the lease. This must be done in accordance with the attached stipulations and the standard terms outlined in the Federal Onshore Oil and Gas Leasing Reform Act, as amended. Restrictions on oil and gas activities in the planning area would take the form of timing limitations, controlled surface use, or no surface occupancy stipulations. These would be used at the discretion of the BLM authorized officer to protect identified surface resources of special concern.

Stipulations would be attached to each lease, before it is offered for sale, by the office which reviews the lease tract. The review would be conducted by consulting the direction given in this resource management plan. In addition, all lands administered by the BLM within the planning area would be subject to the lease notices as shown on the following pages. Every attempt would be made to place stipulations in the lease and to minimize use of Standard Conditions of Approval attached to the site-specific permit. All federal lessees or operators are required to follow procedures set forth by Onshore Oil and Gas Orders, notice to lease, Federal Onshore Oil and Gas Leasing Reform Act, and title 43 Code of Federal Regulations, part 3100.

Geophysical Explorations

Geophysical operations may be conducted regardless of whether or not the land is leased. Notices to conduct geophysical operations on BLM surface are received by a resource area. Administration and surface protection are accomplished through close cooperation of the operator and the BLM. Seasonal restrictions may be imposed to reduce fire hazards, conflicts with wildlife, watershed damage, etc. An operator is required to file a Notice of Intent to Conduct Oil and Gas Exploration Operations for all geophysical activities on public land administered by

the BLM. The notice should adequately show the location and access routes, anticipated surface damages, and time frame. The operator must be bonded, and required to comply with written instructions and orders given by the authorized officer. Signing of a notice of intent by the operator signifies agreement to comply with the terms and conditions of the notice, regulations, and other requirements prescribed by the authorized officer. A prework conference and/or site inspection may be required. Periodic checks during and upon completion of the operations would be conducted to ensure compliance with the terms of notice of intent, including reclamation.

Drilling Permit Process

The federal lessee or operating company selects a drill site based on spacing requirements, subsurface and surface geology, geophysics, topography, and economic considerations. Well spacing is determined by the authorized officer after considering topography, reservoir characteristics, protection of correlative rights, potential for well interference, interference with multiple use of lands, and protection of the surface and subsurface environments. Close coordination with the state would take place. Written field spacing orders are issued for each field. Exceptions to spacing requirements involving federal lands may be granted after joint state and BLM review.

Notice of Staking

Once the company makes the decision to drill, they must decide whether to submit a notice of staking or apply directly for a permit to drill. The notice of staking is an outline of what the company intends to do. It includes a location map and sketched site plan. The notice of staking is used to review any conflicts with known critical resource values and to identify the need for associated rights-of-way and special use permits. The BLM utilizes information contained in the notice of staking and obtained from the on site inspection to develop stipulations to be incorporated into the application for permit to drill. Upon receipt of the notice of staking, the BLM posts the document and pertinent information about the proposed well in the district office for a minimum of 30 days prior to approval, for review and comment by the public.

Application for Permit to Drill

The operator may or may not choose to submit a notice of staking. In either case, an application for permit to drill must be submitted prior to drilling. An application for permit to drill consists of two main parts:

- A 12-point surface plan which describes any surface disturbances. This is reviewed by resource specialists for adequacy with regard to lease stipulations designed to mitigate impacts to identified resource conflicts with the specific proposal; and
- An 8-point subsurface plan which details the drilling program. It is reviewed by the staff petroleum engineer and geologist. This plan includes provisions for casing, cementing, well control, and other safety requirements. For the application for permit to drill option, the on site inspection is used to assess possible impact and develop stipulations to minimize these impacts. If the notice of staking option is not utilized, the 30-day posting period begins with the filing of the application for permit to drill. Private surface owner input is actively solicited during the application for permit to drill stage.

Leasing Stipulations and Notices

Resources to be protected through leasing stipulations and notices are listed below and described in the narrative following the list.

Open - Standard Stipulations

Open - Powersite Stipulation

Open - No Surface Occupancy Stipulations

- Wild and scenic rivers (designated and found suitable for designation)
- Recreation sites (existing and potential)
- Recreation and Public Purposes and Federal Land Policy and Management Act Leases
- Forest disease research and study sites

- Special areas (proposed)
- Progeny test sites
- Horning Seed Orchard
- Visual resource management class I areas
- Riparian reserves
- Great blue heron rookeries
- Osprey nest sites

Open - Controlled Surface Use Stipulations

- Late-successional reserves and district-designated reserve
- Connectivity/diversity blocks
- Visual resource management class II areas
- Steep slopes (over 60 percent)
- Special recreation management areas
- Managed rural interface areas
- Eligible wild and scenic river segments (except those found not suitable through this resource management plan)

Open - Timing Limitations

- Raptor nests

Notice

- Cultural resources

Less restrictive actions were considered during the planning process, but were found inadequate to protect known or suspected special values.

Stipulations may include waivers, exceptions, and modifications, defined generally as follows:

- Waiver. The lifting of a stipulation from a lease that constitutes a permanent revocation of the stipulation from that time forward. The stipulation no longer applies anywhere within the leasehold.
- Exception. This is a one time lifting of a stipulation to allow an activity for a specific proposal. This is a case-by-case exception. The stipulation continues to apply to all other sites within the leasehold to which restrictive criteria apply. It has no permanent effect on the lease stipulation.
- Modification. This is a change to a stipulation that either temporarily suspends the stipulation requirement or permanently lifts the application of the stipulation on a given portion of the lease. Depending on the specific modification, the stipulation may or may not apply to all other sites within the leasehold to which the restrictive criteria apply.

Lease notices are attached to leases in the same manner as stipulations. However, there is an important distinction between lease notices and stipulations. Lease notices do not involve new restrictions or requirements. Any requirements contained in a lease notice are fully supported in laws, regulations, policy, or onshore oil and gas orders.

Open - Standard Stipulations

Standard stipulations for oil and gas are listed in section 6, form 3100-11, Offer to Lease and Lease for Oil and Gas. They are:

- Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air and water, to cultural, biological, visual and other resources, and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of

facilities, timing of operations, and specification of interim and final reclamation measures. Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses shall be conditioned to prevent unnecessary or unreasonable interference with rights of the lessee.

- Prior to disturbing the surface of the leased lands, lessee shall contact the BLM to be apprised of procedures to be followed and modifications or reclamation measures that may be necessary. Areas to be disturbed may require inventories or special studies to determine the extent of impacts to other resources. Lessee may be required to complete minor inventories or short-term special studies under guidelines provided by lessor. If in the conduct of operations, threatened or endangered species, objects of historic or scientific interest, or substantial unanticipated environmental effects are observed, lessee shall immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects until appropriate steps have been taken to protect the site or recover the resources as determined by the BLM in consultation with other appropriate agencies.

Open - Powersite Stipulations (form No. 3730-1): to be used on all lands within powersite reservations.

Open - No Surface Occupancy Stipulations

Resource: Wild and scenic rivers (designated and found suitable for designation)

Stipulation: Surface occupancy is prohibited within the _____ wild and scenic river corridor. Existing roads and trails may be used if such use does not prevent or retard attainment of Aquatic Conservation Strategy objectives.

Objective: protect outstandingly remarkable values.

Resource: Recreation sites

Stipulation: Surface occupancy and use are prohibited within _____ recreation site.

Objective: protect developed and potential recreation sites and visitor experiences.

Resource: Recreation and Public Purposes and Federal Land Policy and Management Act leases

Stipulation: Surface occupancy and use are prohibited on the _____ Recreation and Public Purposes (or Federal Land Policy and Management Act) lease.

Objective: protect public uses on existing Recreation and Public Purposes or Federal Land Policy and Management Act leases and the investments of leaseholders.

Resource: Forest disease research and study sites

Stipulation: Surface occupancy and use are prohibited within _____ forest disease research (or study) site.

Objective: protect BLM investments in research or study sites.

Resource: Special areas

Stipulation: Surface occupancy and use are prohibited within _____ special area.

Objective: protect important historic, cultural, scenic values, natural resources, natural systems or processes, threatened and endangered plant species, and/or natural hazard areas of the special areas.

Resource: Progeny test sites

Stipulation: Surface occupancy and use are prohibited within _____ progeny test site.

Objective: protect the BLM investment in progeny test sites.

Resource: Horning Seed Orchard

Stipulation: Surface occupancy and use are prohibited within the Horning Seed Orchard.

Objective: protect the BLM investment in the Horning Seed Orchard.

Resource: Visual resource management class I areas

Stipulation: Surface occupancy and use are prohibited in visual resource management class I areas.

Objective: preserve the existing character of the landscape.

Resource: Riparian reserves

Stipulation: Surface occupancy and use are prohibited within riparian reserves.

Objective: protect water quality and riparian vegetation.

Resource: Great blue heron rookeries

Stipulation: Surface occupancy and use are prohibited within _____ feet of known great blue heron rookeries.

Objective: protect known great blue heron rookeries.

Resource: Osprey nest sites

Stipulation: Surface occupancy and use are prohibited within _____ feet of known osprey nest sites which have been active within the past seven years.

Objective: protect osprey nest sites.

Open - Controlled Surface Use Stipulations

Resource: Late-successional reserves and district-designated reserve

Stipulation: Unless otherwise authorized, drill site construction and access through late-successional reserves (district-designated reserve) within the leasehold will be limited to established roadways.

Objective: protect late-successional forest stands and plant and animal species dependent on late-successional forest.

Resource: Connectivity/Diversity Blocks

Stipulation: Unless otherwise authorized, drill site construction and access through connectivity/diversity blocks will be limited to established roadways.

Objective: protect late-successional forest stands and plant and animal species dependent on late-successional forest.

Resource: Visual resource management class II areas

Stipulation: All surface-disturbing activities, semipermanent and permanent facilities in visual resource management class II areas may require special design including location, painting and camouflage to blend with the natural surroundings and meet the visual quality objectives for the area.

Objective: keep the visual impacts of leasing activities and facilities within acceptable levels.

Resource: Steep slopes

Stipulation: Prior to disturbance of slopes over 60 percent, an engineering/reclamation plan must be approved by the authorized officer. Such plan must demonstrate how the following would be accomplished:

- **restoration of site productivity;**
- **control of surface runoff;**
- **protection of off site areas from accelerated erosion, such as rilling, gullying, piping, and mass wasting; and**
- **conformance with state and federal water quality laws.**

Objective: maintain soil productivity, provide necessary protection to prevent excessive soil erosion on steep slopes, and avoid areas subject to slope failure, mass wasting, piping, or having excessive reclamation

problems.

Resource: Special recreation management areas

Stipulation: Unless otherwise authorized, drill site construction and access through _____ special recreation management area will be limited to designated roadways. All surface-disturbing activities, semipermanent and permanent facilities may require special design including location, painting and camouflage to blend with the natural surroundings and meet the visual quality objectives for the area.

Objective: protect recreational qualities of areas and facilities and enhance recreational opportunities within the designated boundaries of special recreation management areas.

Resource: Managed rural interface areas

Stipulation: Unless otherwise authorized, drill site construction and access through the managed rural interface area(s) in _____ (legal description) will be limited to designated roadways.

Objective: minimize conflicts with people living in rural interface areas.

Resource: Eligible wild and scenic river segments

Stipulation: Unless otherwise authorized, drill site construction and access through the _____ eligible wild and scenic river corridor will be limited to designated roadways.

Objective: protect outstandingly remarkable values until final determinations are made for these river segments.

Open - Timing Limitations

Resource: Raptor nests

Stipulation: surface use is prohibited from _____ (dates), within _____ (distance) of raptor nest sites which have been active within the past two years. This stipulation does not apply to the operation and maintenance of production facilities.

Objective: protect nest sites of raptors which have been identified as species of special concern in Oregon.

Notice

Resource: Cultural resources

- Notice: An inventory of the leased lands may be required prior to surface disturbance to determine if cultural resources are present and to identify needed mitigation measures. Prior to undertaking any surface-disturbing activities on the lands covered by this lease, the lessee or operator shall:
- Contact the BLM to determine if a cultural resource inventory is required. If an inventory is required, the BLM will complete the required inventory or the lessee or operator, at their option, may engage the services of a cultural resource consultant acceptable to the BLM to conduct a cultural resource inventory of the area of proposed surface disturbance. The operator may elect to inventory an area larger than the standard ten-acre minimum to cover possible site relocation which may result from environmental or other considerations. An acceptable inventory report is to be submitted to the BLM for review and approval no later than that time when an otherwise complete application for approval of drilling or subsequent surface-disturbing operation is submitted.
- Implement mitigation measures required by the BLM. Mitigation may include the relocation of proposed lease-related activities or other protective measures such as data recovery and extensive recordation. Where impacts to cultural resources cannot be mitigated to the satisfaction of the surface management agency, surface occupancy on that area must be prohibited. The lessee or operator shall immediately bring to the attention of the BLM any cultural resources discovered as a result of approved operations under this lease, and shall not disturb such discoveries until directed to proceed by the BLM.
- Authorities: Compliance with section 106 of the National Historic Preservation Act is required for all actions which may affect cultural properties eligible to the National Register of Historic Places. Section 6 of the Oil

and Gas Lease Terms (form 3100-11) requires that operations be conducted in a manner that minimizes adverse impacts to cultural and other resources.

Locatable Minerals Surface Management Standards for Exploration, Mining, and Reclamation

The following operational guidelines for mining activities have been compiled to facilitate compliance with the 43 Code of Federal Regulations 3809 surface management regulations, which apply to all mining operations on BLM-administered lands in the Salem District. All of the following standards may not apply to every mining operation. The BLM will provide site specific standards for some mining proposals. It is the mining claimant's and/or operator's responsibility to avoid "unnecessary or undue degradation," and to promptly perform all necessary reclamation work. Refer to the regulations at 43 Code of Federal Regulations 3809 for general requirements. BLM's *Solid Mineral Reclamation Handbook (H-3042-1)* provides guidance for the reclamation of mining and exploration sites that will be followed on the Salem District.

There is an intergovernmental agreement between BLM and the Oregon Department of Geology and Mineral Industries designed to avoid duplication of regulations, inspections, and approval of reclamation plans as well as minimize repetitive costs to mining operators. The following guidelines include some but not all of the requirements of the various state agencies overseeing mining operations. BLM does not enforce state requirements and they are included here as information. State requirements could change during the plan period.

Prospecting, Exploration, and Mining

Surface Disturbance

BLM Requirements Operations ordinarily resulting in only negligible disturbance as defined in 43 Code of Federal Regulations 3809.0-5(b) are considered to be "casual use" and no notification to or approval by the BLM is required. Casual use activities include staking mining claims, prospecting or sampling or mining with hand tools, gold panning, and use of suction dredges with a suction hose equal to or less than 4 inches in diameter where no structures or occupancy beyond 14 calendar days per year is involved.

All operators proposing occupancy for more than 14 calendar days per year, timber removal, road or trail construction, installation of structures of any kind, suction dredges with suction hoses having an inside diameter of greater than 4 inches, multiple suction dredges regardless of size, or the use of other mechanized earth moving equipment which would cause a surface disturbance of five acres or less during any calendar year, must provide written notice to the district office at least 15 days prior to the commencement of any surface mining disturbance. For operations that will cause greater than five acres of cumulative surface disturbance, the operator is required to submit a Plan of Operations pursuant to the regulations in 43 Code of Federal Regulations 3809.1-4. Generally, the need for a Notice or Plan of Operations is determined on a case-by-case basis.

State of Oregon Requirements Out-of-stream mining, which disposes of all waste water by evaporation and/or seepage with no readily traceable discharge to ground water or surface water, and involves processing of up to 10,000 cubic yards of material per year, must be authorized under General Permit #0600 issued by the Department of Environmental Quality.

All suction dredge operations must be authorized by Permit #0700-J issued by the Department of Environmental Quality. This permit is issued free of charge for dredges having hoses with an inside diameter of 4 inches or less. Registration and a filing fee of $50.00 is required for suction dredges having hoses with an inside diameter greater than 4 inches. Mining operators should contact the Department of Environmental Quality, 750 Front Street NE, Suite 120, Salem, Oregon 97310, phone: 378-8240 extension 238, for further information.

Suction dredging outside the "permitted work period" established for certain waterways by the Oregon Department of Fish and Wildlife (ODFW) will require written permission by an appropriate ODFW district biologist.

The river beds of navigable waterways are controlled by the Oregon Division of State Lands.

Removal or alteration of over 50 cubic yards of material in any waters of the state requires a Removal-Fill permit from the Division of State Lands. This permit is required for any relocation of flowing streams in conjunction with mining.

Any person engaging in onshore mineral exploration, which disturbs more than one surface acre or involves drilling to greater than 50 feet, must obtain an exploration permit from the Oregon Department of Geology and Mineral Industries (DOGAMI). Mining operations involving 5,000 or more cubic yards of material per year or disturbance of one or more acres of land will require an operating permit from DOGAMI.

Timber Removal **The operator may cut and use timber that is in the way of mining activities. An application must be submitted to the authorized officer pursuant to 43 Code of Federal Regulations 3821.4 describing the proposed use of merchantable timber from Oregon and California lands for mining purposes. No merchantable trees may be cut until the application is approved and the trees are marked.**

The Salem BLM office recommends that small trees less than 7 inches in diameter at breast height (dbh) and shrubs be lopped and scattered, or shredded for use as mulch. Trees greater than or equal to 7 inches dbh are to be bucked and stacked in an accessible location unless they are needed for the mining operation.

Firewood **Merchantable conifer timber may not be used for firewood. Firewood permits may be issued to the operator for use in conjunction with the mining operation, but no wood may be used until a permit is obtained from BLM. Permits will be limited to hardwoods or salvage timber that is not considered merchantable. Firewood authorized for use in conjunction with a mining operation is not to be removed from the mining claim.**

Topsoil **Topsoil and usable subsoil (usually the top 12 to 18 inches) should be carefully removed from all areas in advance of excavation or establishment of mine waste dumps and tailings dams. This material should be stockpiled and protected from erosion for use in future reclamation.**

Roads **Existing roads and trails should be used as much as possible. Temporary roads are to be constructed to a minimum width and with minimum cuts and fills. All roads shall be constructed so as not to negatively impact slope stability. Roads will be promptly reclaimed when no longer needed.**

Wetlands **When proposed mining activities will fill or alter wetland areas, the operator must contact the Department of the Army, Corps of Engineers, for the appropriate permit. A copy of the permit must be submitted to the authorized officer in conjunction with a Notice or Plan of Operations.**

Water Quality **All operators shall comply with federal and state water quality standards including the federal Water Pollution Control Act. When mining will be in or near bodies of water, or sediment will be discharged, the Oregon Department of Environmental Quality (DEQ) should be consulted. A discharge permit is required when mining operations discharge turbid water. In some cases, a settling pond may be necessary. It is the operator's responsibility to obtain any needed suction dredging, stream bed alteration, or water discharge permits required by DEQ or other state agencies. Copies of such permits shall be provided to the BLM authorized officer when a Notice or Plan of Operations is filed. All operations, including casual use, shall be conducted in a manner so as to prevent unnecessary or undue degradation of surface and subsurface water resources and shall comply with all pertinent federal and state water quality laws.**

Claim Monuments **State law prohibited the use of plastic pipe for lode claim staking in Oregon after House Bill 2077 was implemented on March 28, 1991. BLM policy requires that existing plastic pipe monuments**

should have all openings (ends and slots) permanently closed. Upon loss or abandonment of the claim, all plastic pipe must be removed from the public lands. When old markers are replaced during normal claim maintenance, they are to be either wood posts or stone and/or earth mounds, constructed in accordance with state law.

Drill Sites Whenever possible, exploratory drill sites should be located next to or on existing roads without blocking public access. When drill sites must be constructed, the size of the disturbance shall be as small as possible. Any operator engaging in mineral exploration that involves drilling to greater than 50 feet must obtain an exploration permit from the Oregon Department of Geology and Mineral Industries (Oregon Revised Statutes 517.962).

Dust and Erosion Control While in operation, and during periods of shutdown, exposed ground surfaces susceptible to erosion will need to be protected. This can be accomplished with seeding, mulching, installation of water diversions, and routine watering of dust producing surfaces.

Fire Safety All state fire regulations must be followed, including obtaining a campfire permit or blasting permit, if needed. All internal gas combustion engines must be equipped with approved spark arresters and exhaust systems.

Safety and Public Access Under Public Law 167, the government has the right to dispose and manage surface resources (including timber) on mining claims located after July 23, 1955. These rights are limited to the extent that they do not endanger or materially interfere with any phase of an ongoing mining operation or uses reasonably incident thereto. Claims located prior to July 23, 1955 may have surface rights, if such claims were verified as being valid under sections 5 and 6 of the act.

Mining claimants shall not exclude the public from mining claims with force, intimidation, or no trespassing signs. It is the operator's responsibility to protect the public from mining hazards. The general public can be restricted only from specific dangerous areas (e.g., underground mines, open pits, or equipment storage sites) by erecting fences, gates and warning signs. Gates or road blocks may be installed on existing or proposed roads only with BLM approval. Gates restricting public access onto a mine site will only be considered in cases where there is a large area safety hazard created by the mining activity. The determination as to whether a safety hazard is large enough to warrant a gate will be determined on a case-by-case basis. Fences (rather than gates) or other approved barriers shall be utilized to protect the public from hazards related to small excavations, tunnels, and shafts.

Some roads that cross private land to reach BLM-administered lands are controlled by private parties. Some of these roads have been assigned BLM road numbers, which can give the impression that they are BLM roads. These roads may grant administrative use to the BLM and its licensees and permittees under a nonexclusive easement. Mining claimants are not considered licensees or permittees and, therefore, they must make their own arrangements with the private party in order to use such a road. No automatic right is granted under any of the mining laws to use a road involved in a nonexclusive easement.

Sewage Self-contained or chemical toilets are to be used at exploration or mining operations and their contents disposed of at approved dump stations. Outhouses and uncontained pit toilets are considered unnecessary and undue degradation and are not allowed. Uncontained pit toilets are not allowed for other users of the public land in this district, and we believe no special rights regarding this issue are granted under the mining laws. County sanitation permits are required for all other types of proposed sanitation facilities.

Structures It is district policy that permanent structures will not be allowed for exploration or prospecting operations. Permanent structures are those fixed to the ground by any of the various types of foundations, slabs, piers, poles, or other means allowed by state or county building codes. The term shall also include structures placed on the ground that lack foundations, slabs, piers or poles, and that can only be moved through disassembly into component parts or by techniques commonly used in house moving. Permanent structures include

trailers, mobile homes, motor homes, campers, house-cars, and the like when fixed to the ground by any method.

Any temporary structures placed on public lands in conjunction with prospecting or exploration are allowed only for the duration of such activities, unless expressly allowed in writing by the authorized officer to remain on the public lands. Temporary structures are defined as structures not fixed to the ground by a foundation or piers (cinder blocks or posts) and that can be moved without disassembly into its component parts. Vans, pickup campers, motor homes, and trailers that have not been piered are considered to be temporary structures.

Permanent structures (as described above) may be allowed for mining operations if they are deemed reasonably incident to conducting the operation. Mining operations are defined as all functions, work, facilities, and activities in connection with development, mining, or processing mineral deposits.

All permanent or temporary structures placed on public lands shall conform with the appropriate state or local building, fire, and electrical codes, and occupational safety and health and mine safety standards. This requirement for existing or future structures on BLM lands in Oregon was published in the Federal Register on July 1, 1992. BLM may require operators to remove such structures if a period of non-operation exceeds 24 consecutive months, and reclamation of the building site(s) must be conducted at that time.

Equipment Only equipment and supplies that are appropriate, reasonable, and in regular use for exploration and mining operations will be allowed on the mining claim. Equipment used only infrequently (including parts and scrap metal) should be stored off site. That which can be readily removed in a small truck and/or trailer at the end of the work day should not be left on site. Storage of unused or infrequently used equipment will not serve to justify occupancy of a mining claim. Accumulation of unused and/or derelict equipment and other unused materials, including trash, may be in violation of federal and state ordinances regarding offensive littering, and will be considered undue and unnecessary degradation of the public lands. BLM may require the operator to remove equipment after an extended period (defined as 24 consecutive months) of non-operation and to reclaim the site. In such cases, the claimant will be required to take immediate mitigative action.

Animals If dogs or cats are to be present at the work site, the operator is required to keep them under control at all times so that they do not chase wildlife, or threaten other people, including government employees conducting site inspections on the public lands. Unless otherwise permitted, animals such as cows, chickens, goats, pigs, or horses are not considered necessary to conduct mining operations and are not allowed on mining claims.

Tailings Ponds Settling ponds must be used to contain sediment, and any discharge must meet the standards of the Oregon Department of Environmental Quality.

Solid and Hazardous Waste Trash, garbage, used oil, etc. must be removed from public land and disposed of properly. Trash, garbage or hazardous wastes must not be buried on public lands. Accumulations of trash, debris, or inoperable equipment on public lands is viewed as unnecessary degradation and will not be tolerated. Operators conducting illegal disposals shall be held financially responsible for the cleanup of such disposals.

Cultural and Paleontological Resources Operators shall not knowingly alter, injure, or destroy any scientifically important paleontological (fossil) remains or any historical or archaeological site, structure, or object on federal lands. The operator shall immediately bring to the attention of the BLM, any paleontological (fossil) remains or any historical or archaeological site, structure, or object that might be altered or destroyed by exploration or mining operations, and shall leave such discovery intact until told to proceed by the authorized officer. The authorized officer shall evaluate the discovery, take action to protect or remove the resource, and allow operations to proceed within ten working days.

Threatened and Endangered Species of Plants and Animals
Operators shall take such action as may be needed to prevent adverse impacts to threatened or endangered

species of plants and animals and their habitat that may be affected by operations, as stipulated in guidelines developed through consultation with the U.S. Fish and Wildlife Service. Under Notice-level operations, if the review of the notice by BLM reveals that a potential conflict with a threatened or endangered species exists, the operator will be advised not to proceed and informed that a knowing violation of the taking provision of the Endangered Species Act will result in a notice of noncompliance and may result in criminal penalties. If the operator wishes to develop measures that will eliminate the conflict, then the authorized officer will arrange for the participation of BLM resource specialists and the U.S. Fish and Wildlife Service in reviewing the proposed revision to the Notice. If processing a proposed Plan of Operations indicates that a potential conflict exists with a threatened or endangered species or its habitat, the authorized officer shall notify the operator that the plan cannot be approved until BLM has complied with section 7 of the Endangered Species Act. Special status species (Federal Candidate/Bureau Sensitive) plants and animals, and their habitat will be identified by the authorized officer, and shall be avoided wherever possible.

Occupancy at Mining Sites

Living on public land in excess of 14 days per calendar year must be reasonably incident to and required for actual continuous mining or diligent exploration operations and will require either a Notice or Plan of Operations. In general, operations at the casual use level are not sufficient to warrant occupancy on a mining claim. The following discussion of occupancy only applies to those operators wishing to assert their right to live full-time on public lands pursuant to privileges granted under the mining laws.

- Any claimant and/or operator who will occupy a claim will identify in the Notice or Plan of Operations, immediate family members (spouse, minor children/stepchildren) who will be living on the mining claim. The claimant and/or operator will be required to be engaged in a good faith, diligent effort in prospecting, exploration, mining, or processing operations to warrant occupancy. The immediate family members, as defined above, will be allowed to occupy the site without engaging in the mining-related work which is being conducted by the claimant or operator.
- The claimant and/or operator will be required to notify the Salem District Office in writing if any additional individuals not identified in the original Notice or Plan of Operations propose to stay on the claim longer than 14 calendar days. Based on a case-by-case review, occupancy by such individuals will be allowed if it is reasonably incident to conducting diligent mining-related activities. In such instances, the Notice or Plan of Operations would be amended to note additional workers allowed to live on the site.

In some cases, it may be reasonably incident for a security guard to live on site in order to protect valuable property, equipment, and/or safeguard the public from workings that are necessary for the mining operation. The need for a security guard shall be such that the person with those duties is required to be present at the site whenever the operation is shut down temporarily or at the end of the workday, or whenever the mining claimant, operator, or workers are not present on the site. The proposed occupancy by a security guard must be described in the Notice or Plan of Operations. If a guard animal is kept at the site, it must be kept under control at all times, or could be considered a public safety hazard.

Reclamation

Reclamation of all disturbed areas must be performed concurrently or as soon as possible after exploration or mining permanently ceases and shall conform to guidelines described in BLM Handbook H-3042-1. Reclamation shall include, but shall not be limited to:

- saving topsoil for final application after reshaping disturbed areas;
- measures to control erosion, landslides, and water runoff;
- measures to isolate, remove or control toxic materials;
- reshaping the area disturbed, applying topsoil, and revegetating disturbed areas where reasonably practicable; and
- rehabilitation of fisheries and wildlife habitat.

When reclamation of the disturbed area has been completed, except to the extent necessary to preserve evidence of mineralization, the BLM must be notified so that an inspection of the area can be made.

Equipment and Debris All mining equipment, vehicles, and structures must be removed from the public lands during periods of non-operation in excess of 24 consecutive months and/or at the conclusion of mining, unless authorization from BLM is given to the operator or claimant in writing. Accumulations of debris and trash on mining claims is considered unnecessary and undue degradation and must be removed immediately regardless of the status of the operation. Failure to do so will result in the issuance of a notice of noncompliance.

Backfilling and Recontouring The first steps in reclaiming a disturbed site are backfilling excavations and reducing high walls, if feasible. Coarse rock material should be replaced first, followed by medium-sized material, with fine materials to be placed on top. Recontouring means shaping the disturbed area so that it will blend in with the surrounding lands, minimize the possibility of erosion, and facilitate revegetation.

Seedbed Preparation Recontouring should include preparation of an adequate seedbed. This is accomplished by ripping or disking compacted soils to a depth of at least 6 inches in rocky areas and at least 18 inches in less rocky areas. This should be done following the contour of the land to limit erosion. All stockpiled settling pond fines, and then topsoil, shall be spread evenly over the disturbed areas.

Fertilizer Due to the generally poor nutrient value of mined soils, it may be necessary to use fertilizer to ensure maximum yield from the seeding mixture. For example, a fertilizer with analysis of 16-16-16, or other approved mix should be spread at the rate of 200 pounds per acre, but not allowed to enter streams or bodies of water.

Seeding BLM-approved seeding prescription must be used to provide adequate revegetation for erosion control, restoration of wildlife habitat, and achieve productive secondary uses of public lands. Seeding should be done in September or October in the Salem District to ensure that seed is in the ground prior to the first significant winter rains. If seeding fails, or is done at the wrong time, the operator may be asked to reseed the area at the appropriate time, as determined by the authorized officer.

Broadcast seeding is preferable on smaller sites. When using a whirlybird-type seed spreader, it is important to keep the different seeds well mixed to achieve even seed distribution. For the best results, a drag harrow should be pulled over the seeded area to cover the seed before mulching. The authorized officer may recommend hydroseeding on critical sites for rapid coverage and erosion control on cut banks, fill slopes, and any other disturbed areas.

Tree Replacement Replacement of destroyed trees may be necessary with the planting of seedlings or container stock.

Mulch As directed by the BLM, during review of the Notice or Plan of Operations, the disturbed area may require mulching during interim or final reclamation procedures. Depending on site conditions, the mulch may need to be punched, netted, or blown on with a tackifier to hold it in place. In some cases, erosion control blankets may be cost effective for use.

Roads After mining is completed, all new roads shall be reclaimed, unless otherwise specified by the BLM. High walls and cutbanks are to be knocked down or backfilled to blend with the surrounding landscape. Remove all culverts from drainage crossings and cut back the fill to the original channel. The roadbed should be ripped to a minimum depth of 18 inches to reduce compaction and provide a good seedbed. The road must then be fertilized, seeded and mulched if necessary. When necessary, water bars are to be used to block access and provide drainage.

Tailings Ponds The ponds should be allowed to dry out and the sediments removed and spread with the topsoil, unless the sediments contain toxic materials. If the ponds contain toxic materials, a plan will be developed to identify, dispose, and mitigate effects of the toxic materials. If necessary, a monitoring plan will also

be implemented. The ponds should then be backfilled and reclaimed.

Visual Resources To the extent practicable, the reclaimed landscape should have characteristics that approximate or are compatible with the visual quality of the adjacent area.

Salable Mineral Resources

Proposed Operations

All proposed salable mineral developments and any exploration that involves surface disturbance would have operation and reclamation plans. They would undergo an appropriate level of review and compliance with the National Environmental Policy Act.

Quarry Design

Due to steep terrain in the operating area, most quarry developments will require a series of benches to effectively maximize the amount of mineral materials to be removed in a safe manner. In most cases, bench height should not exceed 40 feet. If the bench will be used by bulldozers to access other parts of the quarry, the width of the bench should be at least 25 feet. If the bench is not used by equipment, then this width can be reduced to approximately 10 feet.

Clearing of timber and brush should be planned at least 10 feet beyond the edge of the excavation limit. Most often the brush will be piled and burned at the site, or scattered nearby.

If possible, all topsoil and overburden should be stockpiled and saved for eventual quarry site reclamation. These piles may need to be stabilized by mulching or seeding in order to minimize erosion during the winter months.

As a standard procedure, the excavation of the quarry floor should be designed with an outslope of approximately two percent to provide for adequate drainage of the floor. Compliance with this design should be made a requirement of all operators at the site.

Operating Procedures

The following requirements should be made a part of every contract or permit providing for the use of mineral material sites on the district:

- Oversized boulders shall not be wasted but shall be broken and utilized concurrently with the excavated material.
- The operator shall comply with local and state safety codes covering quarry operations, warning signs and traffic control. All necessary permits must be obtained from state and county agencies.
- Use of the site for equipment storage and stockpiling rock material is allowed for the duration of the contract or permit. Use of the site beyond that time would be authorized under a special use permit.

Appendix G
Land Tenure Adjustment, Zone 3 Lands

Township	Section	Subdivision	Acres	Status
T. 3 N., R. 1 W.	9	Lot 8	1.24	Ot
T. 3 N., R. 8 W.	10	NWNE	40.00	PD
T. 3 N., R. 8 W.	11	Lot 2	.01	PD
T. 3 N., R. 8 W.	18	Lot 2	21.44	PD
T. 5 N., R. 6 W.	6	Lot 9	2.12	PD
T. 5 N., R. 7 W.	10	SWNE	40.00	PD
T. 7 N., R. 4 W.	6	Lot 7	.03	PD
T. 9 N., R. 7 W.	32	Lot 8	.72	PD
T. 1 S., R. 3 W.	7	Lot 1	.18	OC
T. 1 S., R. 3 W.	8	Lot 1	.05	PD
T. 1 S., R. 4 W.	15	SWNE, SNW	120.00	OC
T. 2 S., R. 2 E.	4	Lot 2	.04	PD
T. 2 S., R. 2 E.	9	Lot 7	.11	Ot
T. 2 S., R. 3 E.	23	Lots 8, 12	6.25	OC
T. 2 S., R. 3 E.	25	Lots 7, 8	1.69	OC
T. 2 S., R. 3 W.	23	NNE, NENW	120.00	OC
T. 2 S., R. 4 W.	31	Lot 1	1.30	OC
T. 2 S., R. 9 W.	4	M&B	5.30	Ot
T. 2 S., R. 9 W.	7	UN Lot	.19	PD
T. 3 S., R. 2 E.	7	Lot 1	.87	OC
T. 3 S., R. 3 E.	1	Lots 11, 14	54.51	OC
T. 3 S., R. 3 E.	7	NESW	40.00	OC
T. 3 S., R. 3 E.	9	Lot 3, NW, WSE	270.40	OC
T. 3 S., R. 3 E.	15	Lot 6, 10-12	45.93	OC
T. 3 S., R. 3 E.	19	NWNE, NENW	80.00	OC
T. 3 S., R. 3 E.	25	Lots 9-11	24.17	OC
T. 3 S., R. 3 E.	27	Lot 7, SENE, SWSE	103.32	OC
T. 3 S., R. 3 E.	29	Lot 4, SESW, WSE	146.65	OC
T. 3 S., R. 3 E.	33	NW	160.00	OC
T. 3 S., R. 3 E.	35	NE, NW	320.00	OC
T. 3 S., R. 4 E.	31	UN Lot, Lot 5	57.66	OC
T. 3 S., R. 4 W.	33	Lot 4	.11	OC
T. 3 S., R. 9 W.	19	NENW	40.00	PD
T. 3 S., R. 9 W.	20	NWNE	40.00	PD
T. 3 S., R. 9 W.	21	SWSW	40.00	PD
T. 3 S., R. 9 W.	28	SWSE	40.00	PD
T. 3 S., R. 9 W.	31	SSE	80.00	PD
T. 3 S., R. 9 W.	33	NWNE	40.00	PD
T. 3 S., R. 10 W.	30	Lot 15	.45	PD
T. 4 S., R. 1 E.	21	Lot 1	.49	OC
T. 4 S., R. 2 E.	11	NENE, SWNE, ESW, NWSE	200.00	OC
T. 4 S., R. 2 E.	15	NWSE, SESE	80.00	OC
T. 4 S., R. 2 E.	23	SWNW	40.00	OC
T. 4 S., R. 2 E.	33	Lots 1,2	1.80	OC
T. 4 S., R. 3 E.	9	SWNE, NWSE	80.00	OC
T. 4 S., R. 3 E.	19	UN Lot	47.31	OC
T. 4 S., R. 3 E.	21	ENE, SWNW, NSW	200.00	OC
T. 4 S., R. 3 E.	29	ENE	80.00	OC
T. 4 S., R. 3 E.	31	SNE, NWSE	120.00	OC

Land Tenure Adjustment, Zone 3 Lands (continued)

Township	Section	Subdivision	Acres	Status
T. 4 S., R. 1 W.	22	UN Lot	.50	PD
T. 4 S., R. 3 W.	2	Lot 1	.25	PD
T. 4 S., R. 3 W.	26	Lot 14	6.75	PD
T. 4 S., R. 3 W.	34	Lots 1, 2	4.40	PD
T. 4 S., R. 3 W.	35	Lot 13	8.34	OC
T. 4 S., R. 10 W.	19	Lot 1, 15	77.75	PD
T. 4 S., R. 10 W.	28	Lot 3	0.53	PD
T. 5 S., R. 3 W.	4	Lot 1	1.16	PD
T. 5 S., R. 3 W.	11	Lot 1	15.06	OC
T. 5 S., R. 4 W.	27	Lot 1	13.00	OC
T. 5 S., R. 5 W.	13	Lot 3	.05	OC
T. 5 S., R. 5 W.	31	Lot 1	3.57	OC
T. 5 S., R. 5 W.	34	Lot 1	.93	PD
T. 5 S., R. 5 W.	35	Lot 1	8.00	OC
T. 5 S., R. 10 W.	5	UN Lots	2.07	PD
T. 5 S., R. 10 W.	20	SENE	40.00	PD
T. 5 S., R. 10 W.	34	NNE, NENW	120.00	PD
T. 6 S., R. 3 W.	2	Lot 2	.20	PD
T. 6 S., R. 3 W.	5	Lot 1	2.00	OC
T. 6 S., R. 1 E.	13	ENW, SWNW	120.00	OC
T. 6 S., R. 1 E.	25	NWNE, SENW	80.00	OC
T. 6 S., R. 6 W.	35	Lot 1	28.40	OC
T. 6 S., R. 10 W.	20	NESW, NWSE	80.00	PD
T. 6 S., R. 10 W.	26	NWNW	40.00	PD
T. 6 S., R. 10 W.	35	SENE	40.00	PD
T. 7 S., R. 1 E.	1	SESW	40.00	OC
T. 7 S., R. 1 E.	23	SESE	40.00	OC
T. 7 S., R. 3 W.	29	Lot 3	5.42	OC
T. 7 S., R. 6 W.	34	SWSE	40.00	OC
T. 7 S., R. 10 W.	20	NE	160.00	PD
T. 7 S., R. 10 W.	30	WNE, SENE, ESE	200.00	PD
T. 8 S., R. 1 E.	3	SWNW, SW	200.00	OC
T. 8 S., R. 1 E.	27	NESW	40.00	OC
T. 8 S., R. 1 E.	35	Lots 1,2, NWNW, 52	400.22	OC
T. 8 S., R. 4 W.	24	M&B	1.54	Ot
T. 8 S., R. 4 W.	25	M&B	.08	Ot
T. 8 S., R. 10 W.	20	WNWNW	20.00	PD
T. 8 S., R. 11 W.	3	Lot 8	4.73	PD
T. 9 S., R. 1 W.	21	Lot 7, NWNE	84.21	OC
T. 9 S., R. 3 W.	21	Lot 3	.08	Ot
T. 9 S., R. 3 W.	24	UN Lot	1.40	PD
T. 9 S., R. 3 W.	32	Lot 2	4.60	PD
T. 9 S., R. 4 W.	9	Lot 5	1.16	OC
T. 9 S., R. 4 W.	14	Lot 9	.17	PD
T. 9 S., R. 5 W.	32	Lots 1, 2	2.90	PD
T. 9 S., R. 9 W.	19	Por. Lot 29	10.00	PD
T. 9 S., R. 9 W.	33	Lot 17	20.00	PD
T. 9 S., R. 9 W.	34	WNWSW	20.00	PD
T. 9 S., R. 10 W.	26	SWNW	40.00	PD

Land Tenure Adjustment, Zone 3 Lands (continued)

Township	Section	Subdivision	Acres	Status
T. 9 S., R. 10 W.	36	POR. Lots 5, 6	10.00	PD
T. 9 S., R. 11 W.	1	Lot 6	1.46	PD
T. 9 S., R. 11 W.	4	SWSW	40.00	PD
T. 10 S., R. 2 W.	8	Lot 1	6.13	PD
T. 10 S., R. 3 W.	24	Lot 6	.90	PD
T. 10 S., R. 4 W.	11	Lot 5	1.52	OC
T. 10 S., R. 5 W.	19	Lots 1-4, NE, ENW, ESW	480.00	OC
T. 10 S., R. 5 W.	23	Lot 4	0.79	OC
T. 10 S., R. 5 W.	29	NENE, NSW, NSE	145.00	OC
T. 10 S., R. 6 W.	22	Lots 2, 3	15.70	PD
T. 10 S., R. 7 W.	18	SWNE, SESW, WSE	160.00	PD
T. 10 S., R. 10 W.	2	Lot 20	20.00	PD
T. 11 S., R. 3 W.	1	Lot 11	.15	Ot
T. 11 S., R. 7 W.	14	Lot 5	.14	PD
T. 11 S., R. 7 W.	23	Lots 1, 2	1.39	Ot
T. 11 S., R. 8 W.	6	NESW, NWSE, SESE	120.00	PD
T. 11 S., R. 9 W.	31	Lot 2	43.25	PD
T. 11 S., R. 10 W.	12	NNE, NWSW, NESE	160.00	PD
T. 11 S., R. 10 W.	14	Lot 1	2.87	PD
T. 11 S., R. 10 W.	15	Lot 13	3.85	PD
T. 11 S., R. 10 W.	23	NESE	40.00	PD
T. 11 S., R. 10 W.	24	SWSW	40.00	PD
T. 11 S., R. 10 W.	25	Lot 1	37.22	PD
T. 11 S., R. 10 W.	35	SESE	40.00	PD
T. 12 S., R. 3 E.	23	SESW, SWSE	80.00	PD
T. 12 S., R. 4 E.	30	SESW	40.00	PD
T. 12 S., R. 4 E.	31	Lot 1, NENW	84.81	PD
T. 12 S., R. 1 W.	34	Lot 10	11.45	PD
T. 12 S., R. 2 W.	13	Lot 6	7.04	Ot
T. 12 S., R. 4 W.	1	Lot 3	.23	OC
T. 12 S., R. 6 W.	35	Lot 3	.20	Ot
T. 12 S., R. 8 W.	6	Lot 7	40.18	PD
T. 12 S., R. 8 W.	7	Lots 1, 2	79.04	PD
T. 12 S., R. 9 W.	29	ENE, SESE	120.00	PD
T. 12 S., R. 9 W.	32	ENE, SWNE	120.00	PD
T. 12 S., R. 9 W.	34	NENW	40.00	PD
T. 12 S., R. 9 W.	35	NENW, SSW	120.00	PD
T. 12 S., R. 10 W.	6	SWSE	40.00	PD
T. 12 S., R. 10 W.	14	NENE	40.00	PD
T. 12 S., R. 10 W.	25	SW, SE	320.00	PD
T. 12 S., R. 10 W.	35	NESE	320.00	PD
T. 12 S., R. 11 W	9	Lots 5-8, SWNW	201.76	PD
T. 12 S., R. 11 W.	10	Lots 3, 4	76.16	PD
T. 12 S., R. 11 W.	17	Lot 5	38.84	PD
T. 13 S., R. 3 E.	9	NENE	40.00	PD
T. 13 S., R. 3 E.	24	NNE, SENE	120.00	PD
T. 13 S., R. 2 W.	21	NWNE	40.00	OC
T. 13 S., R. 4 W.	30	Lot 5	8.49	PD
T. 13 S., R. 5 W.	29	Lot 1	.84	OC

Land Tenure Adjustment, Zone 3 Lands (continued)

Township	Section	Subdivision	Acres	Status
T. 13 S., R. 9 W.	5	SW	160.00	PD
T. 13 S., R. 9 W.	10	ENE, NESE	120.00	PD
T. 13 S., R. 9 W.	13	NWNW	40.00	PD
T. 13 S., R. 9 W.	20	SSW, SWSE	120.00	PD
T. 13 S., R. 11 W.	3	SWSE	40.00	PD
T. 13 S., R. 11 W.	22	Lots 19, 20	78.23	PD
T. 13 S., R. 11 W.	23	Lot 3	39.15	PD
T. 13 S., R. 11 W.	26	ESE	80.00	PD
T. 13 S., R. 11 W.	28	Lot 9	7.60	PD
T. 13 S., R. 11 W.	33	NESE	40.00	PD
T. 14 S., R. 5 W.	25	Lot 1	.26	OC
T. 14 S., R. 11 W.	3	Lots 1, 2, 25	111.50	PD
T. 14 S., R. 11 W.	4	Lots 29, 30	84.30	PD
T. 14 S., R. 11 W.	5	Lot 10	40.62	PD
T. 14 S., R. 11 W.	6	Lot 16	40.00	PD
T. 14 S., R. 11 W.	10	Lots 1, 11-13, 17	210.21	PD
T. 14 S., R. 11 W.	15	NESE	40.00	PD
T. 14 S., R. 12 W.	35	SENE	40.00	PD
T. 15 S., R. 5 W.	6	Lot 5	1.46	PD
T. 15 S., R. 9 W.	1	Lot 3, SENW, NESE	20.94	OC

E = East; N = North; S = South; W = West; UN = Unnumbered.

PD = Public Domain Land; OC = Oregon and California Revested Railroad Land; Ot = Other.

NOTE: Some tracts in zone 3 are not available for disposal due to the presence of special resource values. They are not included in this list.

Sources: Western Oregon Digital Data Base and Salem District realty records.

Appendix H
Land Tenure Adjustment Criteria

The following criteria would be used to evaluate opportunities for disposal or acquisition of lands to meet resource management objectives for multiple use and sustained yield. This is in accordance with the Federal Land Policy and Management Act and other laws, executive orders, departmental and bureau policy. This list is not all inclusive.

- **Threatened, endangered or sensitive plant and animal species habitat**
- **Riparian areas and wetlands**
- **Fish habitat**
- **Nesting/breeding habitat for game and nongame animals**
- **Key big game seasonal habitat**
- **Developed recreation sites and recreation use areas**
- **High quality scenery**
- **Energy and mineral potential**
- **Land adjacent to rivers eligible for designation under the National Wild and Scenic Rivers Act**
- **Public health and safety**
- **Significant cultural resources and sites eligible for inclusion in the National Register of Historic Places**
- **Designated wilderness areas and areas being studied for possible wilderness designation**
- **Accessibility of the land for public recreation and other uses**
- **Amount of public investments in facilities or improvements and the potential for recovering those investments**
- **Difficulty or cost of administration (manageability)**
- **Suitability of the land for management by another federal agency**
- **Significance of the decision in stabilizing business, social and economic conditions, and/or lifestyles**
- **Whether private sites exist for the proposed use**
- **Encumbrances, including but not limited to, withdrawals or existing leases or permits**
- **Consistency with cooperative agreements and plans or policies of other agencies**
- **Suitability (need for change in land ownership or use) for purposes including but not limited to community expansion or economic development, such as industrial, residential, or agricultural (other than grazing) development**

Appendix I
Proposed Withdrawals (Highway 101)

Legal Description	Acres	West of Highway 101	East of Highway 101 Within 1 Mile	East of Highway 101 Within 2 Miles
T. 3 S., R. 10 W.,				
section 30, lot 15	.45	X		
T. 4 S., R. 10 W.,				
section 19, lots 1 and 15	77.75	X		
section 28, lot 3	.53	X		
T. 5 S., R. 10 W.				
section 5, unnumbered lot in NE¼NW¼SW¼;	1.55	X		
section 5, unnumbered lot in NW¼SE¼SW¼;	.52	X		
section 6, lot 8;	N/E	N/E		
section 20, SE¼NE¼	40.00		X	
T. 8 S., R. 11 W.,				
section 3, lot 8	4.73	X		
T. 9 S., R. 11 W.,				
section 4, SW¼SW¼	40.00		X	
T. 13 S., R. 11 W.,				
section 28, lot 9	7.60			X
T. 14 S., R. 12 W.,				
section 35, SE¼NE¼	40.00		X	
	213.13			

T. = Township; R. = Range; E = East; N = North; S = South; W = West.

N/E = No Estimate

Appendix J
Monitoring

All Land Use Allocations

Expected Future Conditions and Outputs

Protection of SEIS special attention species so as not to elevate their status to any higher level of concern.

Implementation Monitoring

Questions

1. **Are surveys for the species listed in appendix B-1 conducted before ground-disturbing activities occur?**
2. **Are protection buffers being provided for specific rare and locally endemic species and other species in habitats identified in the SEIS record of decision?**
3. **Are the sites of amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens and arthropod species listed in appendix B-1 being protected?**
4. **Are the sites of amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens and arthropod species listed in appendix B-1 being surveyed as directed in the SEIS record of decision??**
5. **Are high priority sites for species management being identified?**
6. **Are general regional surveys being conducted to acquire additional information and to determine necessary levels of protection for arthropods, fungi species that were not classed as rare and endemic, bryophytes, and lichens?**

Monitoring Requirements

1. **At least twenty percent of all management actions will be examined prior to project initiation and re-examined following project completion, to determine if: surveys are conducted for species listed in appendix B-1; protection buffers are provided for specific rare and locally endemic species and other species in habitats identified in the SEIS record of decision; and sites of species listed in appendix B-1 are protected.**
2. **The Annual Program Summary will address Implementation questions 4 through 6.**

Effectiveness and Validation Monitoring

Questions

1. **Are measures taken to protect the SEIS special attention species effective?**
2. **Is the forest ecosystem functioning as a productive and sustainable ecological unit?**

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Riparian Reserves

Expected Future Conditions and Outputs

See Aquatic Conservation Strategy Objectives.

Provision of habitat for special status and SEIS special attention species.

Implementation Monitoring

Questions

1. Are watershed analyses being completed before on-the-ground actions are initiated in Riparian Reserves?
2. Is the width and integrity of the Riparian Reserves being maintained?
   (e.g., did the conditions that existed before management activities change in ways that are not in accordance with the SEIS record of decision Standards and Guidelines and resource management plan management direction?)
3. What silvicultural practices are being applied to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives?
4. Are management activities in Riparian Reserves consistent with SEIS record of decision Standards and Guidelines, resource management plan management direction and Aquatic Conservation Strategy objectives?
5. Are new structures and improvements in Riparian Reserves constructed to minimize the diversion of natural hydrologic flow paths, reduce the amount of sediment delivery into the stream, protect fish and wildlife populations and accommodate the 100-year flood?
6. (A) Are all mining structures, support facilities and roads located outside the Riparian Reserves? (B) Are those located within the Riparian Reserves meeting the objectives of the Aquatic Conservation Strategy? (C) Are all solid and sanitary waste facilities excluded from Riparian Reserves or located, monitored and reclaimed in accordance with SEIS record of decision Standards and Guidelines and resource management plan management direction?
7. Are new recreation facilities within the Riparian Reserves designed to meet, and where practicable, contribute to Aquatic Conservation Strategy objectives? Are mitigation measures initiated where existing recreation facilities are not meeting Aquatic Conservation Strategy objectives?

Monitoring Requirements

1. The files on each year's on-the-ground actions will be checked annually to ensure that watershed analyses were completed prior to project initiation and to ensure the concerns identified in the watershed analysis were addressed in the project's environmental assessment.
2. At least twenty percent of management activities within each resource area will be examined prior to project initiation and re-examined following project completion, to determine whether the width and integrity of the Riparian Reserves were maintained.
3. The Annual Program Summary will report what silvicultural practices are being applied in order to attain Aquatic Conservation Strategy objectives.
4. At least twenty percent of the activities that are conducted or authorized within Riparian Reserves will be reviewed in order to identify whether the actions were consistent with the SEIS record of decision Standards and Guidelines, resource management plan management direction and Aquatic Conservation Strategy objectives. In addition to reporting the results of this monitoring, the Annual Program Summary will also summarize the types of activities that were conducted or authorized within Riparian Reserves.
5. All new structures and improvements within a Riparian Reserve will be monitored during and after construction to ensure that it was constructed to: minimize the diversion of natural hydrologic flow paths, reduce the amount of sediment delivery into the stream, protect fish and wildlife populations and accommodate the 100-year flood.
6. All approved mining Plans of Operations will be reviewed to determine if: A) both a reclamation plan and bond were required; B) structures, support facilities and roads were located outside of Riparian Reserves, or in compliance with Aquatic Conservation Strategy objectives if located inside the Riparian Reserve; and C) solid and sanitary waste facilities were excluded from Riparian Reserves or located, monitored and reclaimed in accordance with resource management plan management direction.
7. The Annual Program Summary will examine status of evaluations of existing recreational facilities inside Riparian Reserves, to ensure that Aquatic Conservation Strategy objectives are met. The Summary will also report on the status of the mitigation measures initiated where the Aquatic Conservation Strategy objectives cannot be met.

Effectiveness and Validation Monitoring

Questions

1. Is the health of Riparian Reserves improving?
2. Are management actions designed to rehabilitate Riparian Reserves effective?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Late-Successional Reserves

Expected Future Conditions and Outputs

Development and maintenance of a functional, interacting, late-successional and old-growth forest ecosystem in Late-Successional Reserves.

Protection and enhancement of habitat for late-successional and old-growth forest-related species including the northern spotted owl and marbled murrelet.

Implementation Monitoring

Questions

1. What is the status of the preparation of assessments and fire plans for Late-Successional Reserves?
2. What activities were conducted or authorized within Late-Successional Reserves and how were they compatible with the objectives of the Late-Successional Reserve assessment? Were the activities consistent with SEIS record of decision Standards and Guidelines, resource management plan management direction and Regional Ecosystem Office review requirements and the Late-Successional Reserve assessment?
3. What is the status of development and implementation of plans to eliminate or control nonnative species which adversely impact late-successional objectives?
4. What land acquisitions occurred, or are underway, to improve the area, distribution, and quality of Late-Successional Reserves?

Monitoring Requirements

1. The Annual Program Summary will address Implementation questions 1 through 4.

Effectiveness and Validation Monitoring

Questions

1. Are forest management activities (e.g., special forest product harvest activities) within Late-Successional Reserves compatible with the goal of developing and maintaining a functional, interacting, late-successional and old-growth forest ecosystem?
2. Does the harvest of special forest products have adverse effects on Late-Successional Reserve objectives?
3. Is a functional, interacting, late-successional ecosystem maintained where adequate, and restored where inadequate?
4. Did silvicultural treatments benefit the creation and maintenance of late-successional conditions?
5. What is the relationship between levels of management intervention and the health and maintenance of late-successional and old-growth ecosystems?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Adaptive Management Areas

Expected Future Conditions and Outputs

Utilization of Adaptive Management Areas for the development and application of new management approaches for the integration and achievement of ecological health, and economic and other social objectives.

Provision of well-distributed, late-successional habitat outside reserves; retention of key structural elements of late-successional forests on lands subjected to regeneration harvest; restoration and protection of riparian zones; and provision of a stable timber supply.

Implementation Monitoring

Questions

1. **Are the Adaptive Management Area plans being developed, and do they establish future desired conditions?**

Monitoring Requirements

1. **The Annual Program Summary will address Implementation question 1.**

Effectiveness and Validation Monitoring

Deferred to SEIS Monitoring Plan and individual Adaptive Management Area management plans.

Matrix

Expected Future Conditions and Outputs

Production of a stable supply of timber and other forest commodities.

Maintenance of important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags, and large trees.

Assurance that forests in the Matrix provide for connectivity between Late-Successional Reserves.

Provision of habitat for a variety of organisms associated with early and late-successional forests.

Questions

1. **Are suitable numbers of snags, coarse woody debris and green trees being left, following timber harvest, as called for in the SEIS record of decision Standards and Guidelines and resource management plan management direction?**
2. **Are timber sales being designed to meet ecosystem goals for the Matrix?**
3. **Are late-successional stands being retained in fifth-field watersheds in which federal forest lands have 15 percent or less late-successional forest?**
4. **What is the age and type of the harvested stands?**

Monitoring Requirements

1. **Each year at least twenty percent of regeneration harvest timber sales in each resource area will be selected for examination by pre- and post-harvest (and after site preparation) inventories to determine snag and green tree numbers, heights, diameters and distribution within harvest units. The measure of distribution of snags and green trees will be the percent in the upper, middle and lower thirds of the sale units monitored. Snags and green trees left following timber harvest activities (including site preparation for reforestation) will be compared to those that were marked prior to harvest.**

The same timber sales will also be inventoried pre- and post-harvest to determine if SEIS record of decision and resource management plan down log retention direction has been followed.

2. At least twenty percent of the files on each year's timber sales will be reviewed annually to determine if ecosystem goals were addressed in the silvicultural prescriptions.
3. All proposed regeneration harvest timber sales in watersheds with less than 15 percent late-successional forest remaining will be reviewed prior to sale to ensure that a watershed analysis has been completed.
4. The Annual Program Summary will address Implementation question 4.

Effectiveness and Validation Monitoring

Questions

1. Are stands growing at a rate that will produce the predicted yields?
2. Are forests in the Matrix providing for connectivity between Late-Successional Reserves?

Monitoring Requirements

Deferred to the SEIS Monitoring Plan.

Air Quality

Expected Future Conditions and Outputs

Attainment of National Ambient Air Quality Standards, Prevention of Significant Deterioration goals, and Oregon visibility protection plan and smoke management plan goals.

Maintenance and enhancement of air quality and visibility in a manner consistent with the Clean Air Act and the state implementation plan.

Implementation Monitoring

Questions

1. Were efforts made to minimize the amount of particulate emissions from prescribed burns?
2. Are dust abatement measures used during construction activities and on roads during BLM timber harvest operations and other BLM commodity hauling activities?
3. Are conformity determinations being prepared prior to activities which may contribute to a new violation of the National Ambient Air Quality Standards, increase the frequency or severity of an existing violation, or delay the timely attainment of a standard?

Monitoring Requirements

1. Each year at least twenty percent of prescribed burn projects will be randomly selected for monitoring to assess what efforts were made to minimize particulate emissions, and whether the environmental analysis that preceded the decision to burn addressed the questions set forth in the SEIS discussion of Emission Monitoring (pg. 3&4-100).
2. Each year at least twenty percent of the construction activities and commodity hauling activities will be monitored to determine if dust abatement measures were implemented.
3. The Annual Program Summary will address Implementation question 3.

Effectiveness and Validation Monitoring

Questions

1. What techniques were the most effective in minimizing the amount of particulate emissions from prescribed burns?

2. Are BLM prescribed burns contributing to intrusions into Class I areas or nonattainment areas?
3. Of the intrusions that the BLM is reported to be responsible for, what was the cause and what can be done to minimize future occurrences?
4. Are BLM prescribed underburns causing adverse air quality impacts to rural communities?
5. Are prescribed fires decreasing the actual or potential impacts from wildfire emissions?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Water and Soils

Expected Future Conditions and Outputs

Restoration and maintenance of the ecological health of watersheds. See Aquatic Conservation Strategy Objectives.

Compliance with state water quality requirements to restore and maintain water quality to protect recognized beneficial uses.

Improvement and/or maintenance of soil productivity.

Reduction of existing road mileage within Key Watersheds.

Implementation Monitoring

Questions

1. Are site-specific best management practices, identified as applicable during interdisciplinary review, carried forward into project design and execution?
2. What watershed analyses have been or are being performed? Are watershed analyses being performed prior to management activities in Key Watersheds?
3. What is the status of identification of in-stream flow needs for the maintenance of channel conditions, aquatic habitat and riparian resources?
4. What watershed restoration projects are being developed and implemented?
5. What fuel treatment and fire suppression strategies have been developed to meet Aquatic Conservation Strategy objectives?
6. What is the status of development of road or transportation management plans to meet Aquatic Conservation Strategy objectives?
7. What is the status of preparation of criteria and standards which govern the operation, maintenance, and design for the construction and reconstruction of roads?
8. What is the status of the reconstruction of roads and associated drainage features identified in watershed analysis as posing a substantial risk? What is the status of closure or elimination of roads to further Aquatic Conservation Strategy objectives; and to reduce the overall road mileage within Key Watersheds? If funding is insufficient to implement road mileage reductions, are construction and authorizations through discretionary permits, denied to prevent a net increase in road mileage in Key Watersheds?
9. What is the status of reviews of ongoing research in Key Watersheds to insure that significant risk to the watershed does not exist?
10. What is the status of evaluation of recreation, interpretive and user-enhancement activities/facilities to determine their effects on the watershed? What is the status of eliminating or relocating these activities/facilities when found to be in conflict with Aquatic Conservation Strategy objectives?
11. What is the status of cooperation with other agencies in the development of watershed-based Research Management Plans and other cooperative agreements to meet Aquatic Conservation Strategy objectives? What is the status of cooperation with other agencies to identify and eliminate wild ungulate impacts which are inconsistent with attainment of Aquatic Conservation Strategy objectives?

Monitoring Requirements

1. Each year at least twenty percent of the timber sales and and other relevant actions stratified by management category will be randomly selected for monitoring to determine whether or not best management practices were implemented as prescribed. The selection of management actions to be monitored will be based on beneficial uses likely to be impacted, and for which best management practices are being prescribed.
2. Compliance checks will be completed for all agreements entered into with providers of municipal water.
3. The Annual Program Summary will address Implementation questions 3 through 11.

Effectiveness and Validation Monitoring

Questions

1. Is the ecosystem function of the watersheds improving?
2. Are state water quality criteria being met? When state water quality criteria is met, are the beneficial uses of riparian areas protected?
3. Are prescribed best management practices maintaining or restoring water quality consistent with basin specific state water quality criteria for protection of specified beneficial uses?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Wildlife Habitat

Expected Future Conditions and Outputs

Maintenance of biological diversity and ecosystem health to contribute to healthy wildlife populations.

Implementation Monitoring

Questions

1. Are suitable (diameter, length, and numbers) of snags, coarse woody debris and green trees being left, in a manner that meets the needs of species and provides for ecological functions in harvested areas as called for in the SEIS record of decision Standards and Guidelines and resource management plan management direction?
2. Are special habitats being identified and protected?
3. What is the status of designing and implementing wildlife habitat restoration projects?
4. What is the status of designing and constructing wildlife interpretive and other user-enhancement facilities?

Monitoring Requirements

1. Each year at least twenty percent of regeneration harvest timber sales in each resource area will be selected for examination by pre- and post-harvest (and after site preparation) inventories to determine snag and green tree numbers, heights, diameters and distribution within harvest units. The measure of distribution of snags and green trees will be the percent in the upper, middle and lower thirds of the sale units monitored. Snags and green trees left following timber harvest activities (including site preparation for reforestation) will be compared to those that were marked prior to harvest.

   The same timber sales will also be inventoried pre- and post-harvest to determine if SEIS record of decision and resource management plan down log retention direction has been followed.
2. Each year at least twenty percent of BLM actions, within each resource area, on lands including or near special habitats will be examined to determine whether special habitats were protected.
3. The Annual Program Summary will address Implementation questions 3 and 4.

Effectiveness and Validation Monitoring

Questions

1. Are habitat conditions for late-successional forest associated species maintained where adequate, and restored where inadequate?
2. Are the snags, green trees and coarse woody debris being left, achieving the habitat necessary to attain the desired population at a relevant landscape level?
3. Are BLM actions intended to protect special habitats actually protecting the habitat? Is the protection of special habitats helping to protect the species population?
4. What are the effects of management on species richness (numbers and diversity)?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.
(Which will address a variety of wildlife species such as amphibians, mollusks, neotropical migratory birds, etc.)

Fish Habitat

Expected Future Conditions and Outputs

See Aquatic Conservation Strategy Objectives.

Maintenance or enhancement of the fisheries potential of streams and other waters, consistent with BLM's Anadromous Fish Habitat Management on Public Lands guidance, BLM's Fish and Wildlife 2000 Plan, the Bring Back the Natives initiative, and other nationwide initiatives.

Rehabilitation and protection of at-risk fish stocks and their habitat.

Implementation Monitoring

Questions

1. Are at-risk fish species and stocks being identified?
2. Are fish habitat restoration and enhancement activities being designed and implemented which contribute to attainment of Aquatic Conservation Strategy objectives?
3. Are potential adverse impacts to fish habitat and fish stocks being identified?

Monitoring Requirements

1. The Annual Program Summary will report on the status of watershed analysis to identify at-risk fish species and stocks, their habitat within individual watersheds, and restoration project needs.
2. The Annual Program Summary will report on the status of the design and implementation of fish habitat restoration and habitat activities.
3. The Annual Program Summary will report on the status of cooperation with federal, tribal, and state fish management agencies to identify and eliminate impacts associated with poaching, harvest, habitat manipulation and fish stocking which threaten the continued existence and distribution of native fish stocks inhabiting federal lands. The summary will also identify any management activities or fish interpretive and other user-enhancement facilities which have detrimental effects on native fish stocks.
4. At least twenty percent of the files on each year's timber sales, and other relevant actions, will be reviewed annually to evaluate documentation regarding fish species and habitat and related recommendations and decisions in light of policy and SEIS record of decision Standards and Guidelines and resource management plan management direction. If mitigation was required, review will ascertain whether such mitigation was incorporated in the authorization document and the actions will be reviewed on the ground after completion to ascertain whether the mitigation was carried out as planned.

Effectiveness and Validation Monitoring

Questions

1. Is the ecological health of the aquatic ecosystems recovering or sufficiently maintained to support stable and well-distributed populations of fish species and stocks?
2. Is fish habitat in terms of quantity and quality of rearing pools, coarse woody debris, water temperature and width to depth ratio being maintained or improved as predicted?
3. Are desired habitat conditions for listed, sensitive, and at-risk fish stocks maintained where adequate, and restored where inadequate?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Special Status and SEIS Special Attention Species and Habitat

Expected Future Conditions and Outputs

Protection, management and conservation of federally listed and proposed species and their habitats, to achieve their recovery in compliance with the Endangered Species Act and bureau special status species policies.

Conservation of federal candidate and bureau sensitive species and their habitats so as not to contribute to the need to list and recover the species.

Conservation of state-listed species and their habitats to assist the state in achieving management objectives.

Maintenance or restoration of community structure, species composition, and ecological processes of special status plant and animal habitat.

Protection of bureau assessment species and SEIS special attention species so as not to elevate their status to any higher level of concern.

Implementation Monitoring

Questions

1. Are special status species being addressed in deciding whether or not to go forward with forest management and other actions? During forest management and other actions that may disturb special status species, are steps taken to adequately mitigate disturbances?
2. Are the actions identified in plans to recover species being implemented in a timely manner?
3. What coordination with other agencies has occurred in the management of special status species?
4. What land acquisitions occurred or are under way, to facilitate the management and recovery of special status species?
5. What site specific plans for the recovery of special status species were or are being developed?
6. What is the status of analysis which ascertains species requirements or enhances the recovery or survival of a species?
7. What is the status of efforts to maintain or restore the community structure, species composition and ecological processes of special status plant and animal habitat?

Monitoring Requirements

1. Each year at least twenty percent of all management actions will be selected for examination to evaluate documentation regarding special status species and related recommendations and decisions in light of Endangered Species Act requirements, policy and SEIS record of decision Standards and Guidelines and resource management plan management direction. If mitigation was required, review will ascertain whether such mitigation was incorporated in the authorization document and the actions will be reviewed on the ground after completion to ascertain whether the mitigation was carried out as planned.
2. Review implementation schedule and actions taken annually, to ascertain if the actions to recover species were carried out as planned.
3. The Annual Program Summary will address Implementation questions 3 through 7.

Effectiveness and Validation Monitoring

Questions

1. Are trends for special status species meeting the objectives of mitigation and/or conservation actions?
2. Have any Federal Candidate, Bureau Assessment or Bureau Sensitive species been elevated to higher levels of concern due to BLM management?
3. Were desired habitat conditions for the northern spotted owl and marbled murrelet maintained where adequate and restored where inadequate?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.
(Which will address a variety of special status species including marbled murrelet, bald eagle, northern spotted owl, anadromous fish species, etc.)

Special Areas

Expected Future Conditions and Outputs

Maintenance, protection and/or restoration of the relevant and important values of the special areas which include: Areas of Critical Environmental Concern, Outstanding Natural Areas, Research Natural Areas, and Environmental Education Areas.

Provision of recreation uses and environmental education in outstanding natural areas. Management of uses to prevent damage to those values that make the area outstanding.

Preservation, protection or restoration of native species composition and ecological processes of biological communities in research natural areas.

Provision and maintenance of environmental education opportunities in environmental education areas. Management of uses to minimize disturbances of educational values.

Retention of existing research natural areas and existing areas of critical environmental concern that meet the test for continued designation. Retention of other special areas. Provision of new special areas where needed to maintain or protect important values.

Implementation Monitoring

Questions

1. Are BLM actions and BLM-authorized actions/uses near or within special areas consistent with resource management plan objectives and management direction for special areas?
2. What is the status of the preparation, revision and implementation of area of critical environmental concern management plans?

3. Are interpretive programs and recreation uses being developed and encouraged in outstanding natural areas? Are the outstanding values of the outstanding natural areas being protected from damage?
4. What environmental education and research initiatives and programs are occurring in the research natural areas and environmental education areas?
5. Are existing BLM actions and BLM-authorized actions and uses not consistent with management direction for special areas being eliminated or relocated?
6. Are actions being identified which are needed to maintain or restore the important values of the special areas? Are the actions being implemented?
7. Are protection buffers being provided for specific rare and locally endemic species and other species in habitats identified in the SEIS record of decision?

Monitoring Requirements

1. Annually, the files on all actions and research proposals within and adjacent to special areas will be reviewed to determine whether the possibility of impacts on area of critical environmental concern values was considered, and whether any mitigation identified as important for maintenance of area of critical environmental concern values was required. If mitigation was required, the relevant actions will be reviewed on the ground, after completion, to ascertain whether it was actually implemented.
2. The Annual Program Summary will address Implementation questions 2 through 7.

Effectiveness and Validation Monitoring

Questions

1. Are the implemented management actions, designed to protect the values of the special areas, effective?
2. Are the special areas managed to restore or prevent the loss of outstanding values and minimize disturbance?

Monitoring Requirements

1. Each special area will be monitored at least every three years to determine if the values for which it was designated are being maintained.
2. Each area of critical environmental concern where proactive management actions have been implemented will be monitored annually for the first three years and after that every three years or until objectives are met, to determine these actions met their objectives.

Cultural Resources Including American Indian Values

Expected Future Conditions and Outputs

Identification of cultural resource localities for public, scientific, and cultural heritage purposes.

Conservation and protection of cultural resource values for future generations.

Provision of information on long-term environmental change and past interactions between humans and the environment.

Fulfillment of responsibilities to appropriate American Indian groups regarding heritage and religious concerns.

Implementation Monitoring

Questions

1. Are cultural resources being addressed in deciding whether or not to go forward with forest management and other actions? During forest management and other actions that may disturb cultural resources, are steps taken to adequately mitigate disturbances?
2. What mechanisms have been developed to describe past landscapes and the role of humans in shaping those

landscapes?

3. What efforts are being made to work with American Indian groups to accomplish cultural resource objectives and achieve goals outlined in existing memoranda of understanding and develop additional memoranda as needs arise?
4. What public education and interpretive programs were developed to promote the appreciation of cultural resources?

Monitoring Requirements

1. At least twenty percent of the files on each year's timber sales and other relevant actions (e.g., rights-of-way, instream structures) will be reviewed annually to evaluate documentation regarding cultural resources and American Indian values and decisions in light of requirements, policy and SEIS record of decision Standards and Guidelines and resource management plan management direction. If mitigation was required, review will ascertain whether such mitigation was incorporated in the authorization document and the actions will be reviewed on the ground after completion to ascertain whether the mitigation was carried out as planned.
2. The Annual Program Summary will address Implementation questions 2 through 4.

Effectiveness and Validation Monitoring

Questions

1. Are sites of religious and cultural heritage adequately protected?
2. Do American Indians have access to and use of forest species, resources and places important for cultural, subsistence, or economic reasons; particularly those identified in treaties?

Monitoring Requirements

1. All cultural resource sites, where management and/or mitigation measures are utilized to protect the resource, will be monitored at least once a year to determine if the measures were effective.

The balance is deferred to SEIS Monitoring Plan.

Visual Resources

Expected Future Conditions and Outputs

Preservation or retention of the existing character of landscapes on BLM-administered lands allocated for visual resource management class I and II management; partial retention of the existing character on lands allocated for visual resource management class III management and major modification of the existing character of some lands allocated for visual resource management class IV management.

Continuation of emphasis on management of scenic resources in selected high-use areas to retain or preserve scenic quality.

Implementation Monitoring

Questions

1. Are visual resource design features and mitigation methods being followed during timber sales and other substantial actions in class II and III areas?

Monitoring Requirements

1. Twenty percent of the files for timber sales and other substantial projects in visual resource management class II or III areas will be reviewed to ascertain whether relevant design features or mitigating measures were included.

Effectiveness and Validation Monitoring

Questions

1. Are timber sales and other major actions in class II and class III areas meeting or exceeding visual resource management objectives?
2. Are visual resource management objectives being met consistently, over long periods of time, in class II management areas?

Monitoring Requirements

1. Each year all timber sales and other selected projects in visual resource management class II areas and at least twenty percent of sales or projects in class III areas that have special design features, or mitigating measures for visual resource protection, will be selected for monitoring to evaluate the effectiveness of the practices used to conserve visual resources.
2. In visual resource management class II management areas, where two or more sales or actions have occurred, impacts will be monitored at a minimum interval of five years.

Wild and Scenic Rivers

Expected Future Conditions and Outputs

Protection of the outstandingly remarkable values of designated components of the National Wild and Scenic Rivers System through the maintenance and enhancement of the natural integrity of river-related values.

Protection of the outstandingly remarkable values of eligible/suitable wild and scenic rivers and the maintenance or enhancement of the highest tentative classification pending resolution of suitability and/or designation.

Protection of the natural integrity of river-related values for the maintenance or enhancement of the highest tentative classification determination for rivers found eligible or studied for suitability.

Designation of important and manageable river segments suitable for designation where such designation contributes to the National Wild and Scenic Rivers System.

Implementation Monitoring

Questions

1. Are BLM actions and BLM-authorized actions consistent with protection of the outstandingly remarkable values of designated, suitable, and eligible but not studied, rivers?
2. Are existing plans being revised to conform to Aquatic Conservation Strategy objectives? Are revised plans being implemented?

Monitoring Requirements

1. Annually, the files on all actions and research proposals within and adjacent to wild and scenic river corridors will be reviewed to determine whether the possibility of impacts on the outstandingly remarkable values was considered, and whether any mitigation identified as important for maintenance of the values was required. If mitigation was required, the relevant actions will be reviewed on the ground, after completion, to ascertain whether it was actually implemented.
2. The Annual Program Summary report will summarize progress on preparation and revision of wild and scenic river management plans, their conformance with the Aquatic Conservation Strategy objectives, and the degree to which these plans have been implemented.

Effectiveness and Validation Monitoring

Questions

1. Are the outstandingly remarkable values for which the wild and scenic rivers were designated being maintained?
2. Are the outstandingly remarkable values of the rivers which were found suitable or eligible but not studied, protected?

Monitoring Requirements

1. Each wild and scenic river will be monitored at least once a year to determine if the outstandingly remarkable values are being maintained.
2. Each river, which was found suitable or eligible but not studied, will be monitored at least once a year to determine if the outstandingly remarkable values are being maintained.

Rural Interface Areas

Expected Future Conditions and Outputs

Consideration of the interests of adjacent and nearby rural land owners, including residents, during analysis, planning and monitoring related to managed rural interface areas. (These interests include personal health and safety, improvements to property, and quality of life.)

Determination of how land owners might be or are affected by activities on BLM-administered lands.

Implementation Monitoring

Questions

1. Are design features and mitigation measures developed and implemented to avoid/minimize impacts to health, life and property and quality of life and to minimize the possibility of conflicts between private and federal land management?

Monitoring Requirements

1. Each year at least twenty percent of all actions within the identified rural interface areas will be selected for examination to determine if special project design features and mitigation measures were included and implemented as planned.

Effectiveness and Validation Monitoring

Questions

1. Are the rural interface area design features and mitigation measures effective in minimizing impacts to health, life and property?

Monitoring Requirements

1. At least twenty percent of actions within the identified rural interface areas which had design features or mitigation measures will be examined following completion to assess the effectiveness of the action.

Socioeconomic Conditions

Expected Future Conditions and Outputs

Contribution to local, state, national, and international economies through sustainable use of BLM-administered lands and resources and use of innovative contracting and other implementation strategies.

Provision of amenities for the enhancement of communities as places to live and work.

Implementation Monitoring

Questions

1. **What strategies and programs have been developed, through coordination with state and local governments, to support local economies and enhance local communities?**
2. **Are resource management plan implementation strategies being identified that support local economies?**
3. **What is the status of planning and developing amenities that enhance local communities, such as recreation and wildlife viewing facilities?**

Monitoring Requirements

1. **The Annual Program Summary will address Implementation questions 1 through 3.**

Effectiveness and Validation Monitoring

Questions

1. **What level of local employment is supported by BLM timber sales and forest management practices?**
2. **What were Oregon and California and Coos Bay Wagon Road payments to counties?**

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Recreation

Expected Future Conditions and Outputs

Provision of a wide range of developed and dispersed recreation opportunities that contribute to meeting projected recreation demand within the planning area.

Provision of nonmotorized recreational opportunities and creation of additional opportunities consistent with other management objectives.

Implementation Monitoring

Questions

1. **What is the status of the development and implementation of recreation plans?**

Monitoring Requirements

1. **The Annual Program Summary will address Implementation question 1.**

Effectiveness and Validation Monitoring

Questions

1. Based on the Statewide Comprehensive Outdoor Recreation Plan supply and demand data and public comments, is the range of recreation opportunities on BLM-administered lands (i.e., roaded vs. unroaded) meeting public needs?
2. Are BLM-developed recreation facilities meeting public needs and expectations, including facility condition and visitor safety considerations?
3. Are off-highway vehicle designations adequate to protect resource values while providing appropriate motorized vehicle recreation opportunities?

Monitoring Requirements

1. Each special recreation management area will be monitored at least every three years to determine if the types of recreation opportunities being provided are appropriate.
2. All developed recreation sites will be monitored annually to determine if facilities are being properly managed and all deficiencies documented.
3. All outstandingly remarkable value designations will be reviewed annually to determine if revisions are necessary to protect resource values and resolve user conflicts.

Timber Resources

Expected Future Conditions and Outputs

Provision of a sustained yield of timber and other forest products.

Reduction of the risk of stand loss due to fires, animals, insects, and diseases.

Provision of salvage harvest for timber killed or damaged by events such as wildfire, windstorms, insects, or disease, in a manner consistent with management objectives for other resources.

Implementation Monitoring

Questions

1. By land-use allocation, how do timber sale volumes, harvested acres, and the age and type of regeneration harvest stands compare to the projections in the SEIS record of decision Standards and Guidelines and resource management plan management objectives?
2. Were the silvicultural (e.g., planting with genetically-selected stock, fertilization, release, and thinning) and forest health practices anticipated in the calculation of the expected sale quantity, implemented?

Monitoring Requirements

1. The Annual Program Summary will report both planned and non-planned volumes sold. The report will also summarize annual and cumulative timber sale volumes, acres to be harvested, and stand ages and types of regeneration harvest for General Forest Management Areas, Connectivity/Diversity Blocks and Adaptive Management Areas, stratified to identify them individually.
2. An annual districtwide report will be prepared to determine if the silvicultural and forest health practices identified and used in the calculation of the allowable sale quantity were implemented. This report will be summarized in the Annual Program Summary.

Effectiveness and Validation Monitoring

Questions

1. Is reforestation achieving desired stocking?
2. Are stands growing at a rate that will produce the predicted yields?
3. Is the long-term health and productivity of the forest ecosystem being protected in the Matrix?

Monitoring Requirements

1. First, third, and fifth year surveys will be used to determine if reforestation is meeting reforestation objectives.

The balance is deferred to SEIS Monitoring Plan.

Special Forest Products

Expected Future Conditions and Outputs

Production and sale of special forest products when demand is present and where actions taken are consistent with primary objectives for the land use allocation.

Utilization of the principles of ecosystem management to guide the management and harvest of special forest products.

Implementation Monitoring

Questions

1. Is the sustainability and protection of special forest product resources ensured prior to selling special forest products?
2. What is the status of the development and implementation of specific guidelines for the management of individual special forest products?

Monitoring Requirements

1. The Annual Program Summary will address Implementation questions 1 and 2.

Effectiveness and Validation Monitoring

Questions

1. Are special forest products being harvested at a sustainable level?

Monitoring Requirements

Deferred to SEIS Monitoring Plan.

Noxious Weeds

Expected Future Conditions and Outputs

Containment and/or reduction of noxious weed infestations on BLM-administered lands using an integrated pest management approach.

Avoidance of the introduction or spread of noxious weed infestations in all areas.

Implementation Monitoring

Questions

1. Are noxious weed control methods compatible with Aquatic Conservation Strategy objectives?

Monitoring Requirements

1. Review the files of at least twenty percent of each year's noxious weed control applications to determine if noxious weed control methods were compatible with Aquatic Conservation Strategy objectives.

Effectiveness and Validation Monitoring

Questions

1. Are management actions effectively containing or reducing the extent of noxious weed infestations?

Monitoring Requirements

1. At least twenty percent of the noxious weed sites subjected to treatment will be monitored to determine if the treatment was effective.

Fire/Fuels Management

Expected Future Conditions and Outputs

Provision of the appropriate suppression responses to wildfires in order to meet resource management objectives and minimize the risk of large-scale, high intensity wildfires.

Utilization of prescribed fire to meet resource management objectives. (This will include, but not be limited to, fuels management for wildfire hazard reduction, restoration of desired vegetation conditions, management of habitat, and silvicultural treatments.)

Adherence to smoke management/air quality standards of the Clean Air Act and state implementation plan for prescribed burning.

Implementation Monitoring

Questions

1. What is the status of the preparation and implementation of fire management plans for Late-Successional Reserves and Adaptive Management Areas?
2. Have additional analysis and planning been completed to allow some natural fires to burn under prescribed conditions?
3. Do wildfire suppression plans emphasize maintaining late-successional habitat?
4. Are Wildfire Situation Analyses being prepared for wildfires that escape initial attack?
5. What is the status of the interdisciplinary team preparation and implementation of fuel hazard reduction plans?

Monitoring Requirements

1. The Annual Program Summary will address Implementation questions 1 through 5.

Effectiveness and Validation Monitoring

Questions

1. **Are fire suppression strategies, practices, and activities meeting resource management objectives and concerns?**
2. **Are prescribed fires applied in a manner which retains the amount of coarse woody debris, snags, and duff at levels determined through watershed analysis?**
3. **Are fuel profiles being modified in order to lower the potential of fire ignition and rate of spread; and to protect and support land use allocation objectives by lowering the risk of high intensity, stand-replacing wildfires?**

Monitoring Requirements

Deferred to SEIS Monitoring Plan.