

INTRODUCTION

The Environmental Assessment (EA) is a site specific analysis of potential environmental impacts that could result with the implementation of a proposed action. The EA assists the Agency in project planning and insuring compliance with the National Environmental Protection Act (NEPA) and making a determination as to whether any "significant" impacts could result from proposed actions. This EA has been prepared for the Swiftwater Resource Area's proposed **WARD CREEK DENSITY MANAGEMENT and COMMERCIAL THINNING HARVEST**.

This proposal is in conformance with the *Final - Roseburg District Proposed Resources Management Plan / Environmental Impact Statement (PRMP/EIS)* dated October 1994 and its associated *Roseburg District Record of Decision and Resources Management Plan (RMP)* dated June 2, 1995. The RMP is supported by and consistent with the *Final 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 (FSEIS)*; otherwise known as the "Northwest Forest Plan" (NFP) dated Feb. 1994 and its associated *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (ROD)* and *Standards and Guidelines for Management of Habitat for Late-Successional and Old Growth Related Species Within the Range of the Northern Spotted Owl (S&G's)* dated April 13, 1994. The ROD establishes management direction consisting of "... extensive standards and guidelines including land allocations, that comprise a comprehensive ecosystem management strategy" (ROD pg. 1).

This project was formerly analyzed in EA No. OR-104-97-05 and sold at auction on December 23, 1997. This sale has been awarded but, due to an Appeal by Umpqua Watersheds, Inc., has not been operated on. On April 28, 1998, Judge Rothstein of the U.S. District Court, Western District of Washington, issued an order in the case of Pacific Coast Federation of Fisherman's Association et al, vs the National Marine Fisheries Service (NMFS), et al, which indicates the BLM is procedurally out compliance with Section 7(a)(2) of the Endangered Species Act (ESA) due to a determination that the site-specific Biological Opinions (BO) of June 18, 1997 and July 22, 1997 are invalid. This analysis is needed to more clearly show project consistency with Watershed Analysis (WA), the Aquatic Conservation Strategy objectives, and NMFS' March 18, 1997 plan-level Biological Opinion.

The project described in this EA will undergo formal public review. After the completion of public review a "Finding of No Significant Impact" (FONSI) would be signed as appropriate. A signed FONSI would find that no "significant" environmental impact (effect) would occur with the implementation of the proposed actions beyond those already addressed in the FSEIS when the project design features specified in this EA are followed. "Significance" has a strict NEPA definition and is found in regulation 40 CFR 1508.27. The FONSI documents the application of this definition of significance to the proposed action.

A Revised Decision Document would be completed after public review to document the decision and reflect any changes as the result of public review. The Revised Decision Document would document the decision to award this sold sale. This notice will be placed in *The News Review* and constitute a decision document with authority to proceed with the proposed action.

I. PURPOSE OF AND NEED FOR ACTION

This section provides a general overview of the proposed action. Included are: the need for the action, a general description and background of the proposal, the issues to be analyzed, and issues eliminated from detailed analysis in this EA.

A. Need for Action

The FSEIS and the RMP respond to dual needs: "... the need for a healthy forest ecosystem with habitat that will support populations of native species and includes protection for riparian areas and waters. ... and the need for a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies ..." (RMP pg. 15). A portion of this project would be part of a research project conducted by the National Biological Service's (NBS) Density Management Study that examines the effects of managing the density of young stands to accelerate the attainment of old growth characteristics (Tappeiner et al. 1996).

B. Description of the Proposal

The proposal is to harvest timber in the Lower Pass Creek of the Elk Creek Watershed and Siuslaw Watersheds located in Sections 5, 7, and 17; T21S R4W, W.M. (see maps, Appendix A through C). The proposed project area is approximately 20 road miles northeast of Drain and 37 air miles north northeast of Roseburg, Oregon. Approximately 200 acres were analyzed for potential harvest activities. This project is within the Matrix Land Use Allocation (LUA) and in what the RMP classifies as "Connectivity" lands i.e. lands that are available for timber harvest and provide connectivity between Late-Successional Reserves. The project is also in the Riparian Reserve LUA and is not in a Key Watershed.

The Matrix LUA is one of the seven allocations specified in the ROD. "Stands in the matrix can be managed for timber and other commodity production, and to perform an important role in maintaining biodiversity" (S&G, pg. B-6) by providing for biological legacies (snags, large woody debris and retention trees) that bridge past and future forests. The "Riparian Reserves [LUA] are portions of watersheds where riparian-dependent resources receive primary emphasis ..." (S&G, pg. B-12). Temporary new road construction and renovation or improvement of existing roads would also occur. Section II (pg. 4) of this EA provides a more detailed description of the Proposed Action Alternative.

C. Background (Watershed Analysis)

The Ward Creek Density Management and Commercial Thinning project occurs across two 5th field watersheds: Elk Creek watershed (187,234 acres), and Siuslaw (104,683 acres). Elk Creek 5th Field Watershed 2nd Iteration, East Elk Watershed Analysis Unit (WAU) and Siuslaw watershed analyses (WA) were used in this EA and are available for public review at the Roseburg District office.

Current landscape patterns include natural stands that are the result of fire, managed stands established following timber harvest, and non-forested agricultural and pasture lands. Two major highways (I-5 and State highway 38) and several small towns are located within the East Elk WAU. The "Restoration Opportunities" section in the East Elk WA, page 8-2, recommended that treatment of stands in the Mid Seral stages (of the type to be treated in this proposal) be scattered across the landscape and kept at concentrations of less than 300 acres. This project adhered to this recommendation. The Siuslaw WA "Management Opportunities" section, page V-3, recommended that Pole-Young stands (of the type to be treated in this proposal) should be thinned to accelerate the development of large trees along with a number of other goals to help create late- successional type habitat.

The ROD requires that late-successional forests be retained in watersheds that comprise 15% or less late-successional forests on Federal lands in fifth field watersheds, i.e., watersheds between 20 and 200 square miles (S&G, pg. C-44). Any timber stands greater than approximately 80 years of age are considered late-successional habitat (ROD, pg. B-2). For the Siuslaw watershed, analysis of current forest inventories shows that of the 43,193 acres of Federal ownership (page C-4 of Siuslaw WA), approximately 2,243 acres (5%) are Mature (80 to 200 years) or Mature over Young (see definitions page C-9,10) and approximately 11,830 acres (27%) are Old Forest, (200+ years) or Old Over Young. Current forest inventories for the Elk Creek 5th field watershed, show that of the 44,935 acres of Federal ownership, approximately 18,811 acres (41.9%) are late-successional forests (Elk Creek 5th Field Watershed 2nd Iteration, pg. 2, Table 2).

Because the Proposed Action Alternative in this EA proposes to commercially thin timber stands that are 40 to 60 years of age there would be no change in the amount or percentage of late-successional type forests on Federal lands within either the Siuslaw watershed or Elk Creek watershed.

D. Objectives

For the Matrix portion:

S "Produce a sustainable supply of timber and other forest commodities " (RMP pg. 33) and meet District ASQ goals.

S Improve stand health by reducing the excess stocking in the forest stand to increase the growth and vigor of the remaining individual trees.

2. For the density management portion:
 - Study how regulation of stand density enhances stand structure and diversity (Density Management Studies, pg. 6).

3. For the Riparian Reserve portion:
 - Accelerate the development of large conifers of various form and structure for large trees and future recruitment of coarse woody debris (CWD) within the Riparian Reserve (S&G's, pg. C-32)

4. Practice ecosystem management as outlined in the ROD and RMP.
 - S** avoid damage to riparian ecosystems and meet the objectives of the "Aquatic Conservation Strategy" (ROD, pg. B-11; RMP pg. 19)
 - S** "Provide habitat for a variety of organisms associated with both late successional and younger forests." (RMP pg. 33)
 - S** maintain "ecologically valuable structural components such as down logs, snags and large trees" (RMP pg. 33)
 - S** improve and/or maintain soil productivity (RMP pg. 35)
 - S** "Maintain or enhance the fisheries potential of the streams ..." (RMP pg. 40)
 - S** protect, manage and conserve all special status and Supplemental Environmental Impact Statement special attention species habitat (RMP pg. 41)

E. Decisions to be Made to Meet Proposal Objectives

1. The Decision Maker (the Swiftwater Area Manager) will need to decide:
 - S** if this analysis supports the signing of a FONSI.
 - S** whether to select the Proposed Action Alternative, modify the Proposed Action Alternative, choose another alternative, or accept the No Action Alternative.

2. Consultation with the National Marine Fisheries Service (NMFS) will need to be completed for the Cutthroat trout and Coho salmon. This project may have to be altered as the result of these consultations (See section V, para. A).

F. Issues Considered but Eliminated from Detailed Analysis

The Interdisciplinary (ID) Team identified the following concerns during project design. They were eliminated from further analysis because: (1) project design features (PDF's) were included in the Proposed Action Alternative to lessen the anticipated environmental impacts of specific activities, or (2) the concern was not considered as a key issue warranting detailed analysis, or (3) the impacts are within the limits addressed in the ROD/RMP. Section II, paragraph C (pg. 5) provides a list of specific PDF's incorporated into the preferred alternative to deal with these issues. These issues are summarized in Appendix D ("Scoping Summary") and addressed the Specialist's Reports in Appendix F.

1. Botany
 - a. Possible *Buxbaumia viridis* sites found in Unit 5A
 - b. Spread of noxious weeds along roads
 - c. *Helvella compressa* (strategy 1) is plentiful in Unit 7B & 7D.

2. Soils
 - a. Condition of nonsurfaced roads into unit 5A
 - b. Two steep-sided drainages in the south portion of Unit 5A
 - c. Slope stability concerns in Unit 7C and E
 - d. Slope stability concerns in Unit 17A

3. Wildlife
 - Red legged frog found in wet spots in existing road

"Critical Elements of the Human Environment" is a list of elements specified in BLM Handbook H-1790-1 that must be considered in all EA's. These are elements of the human environment subject to requirements specified in statute, regulation, or Executive Order. These elements are as follows:

1. Air Quality
2. Areas of Critical Environmental Concern (ACEC)
3. Cultural Resources
4. Environmental Justice
5. Farm Lands (prime or unique)
6. Floodplain
7. Native American Religious Concerns
8. Threatened or Endangered Species
9. Wastes, Hazardous or Solid
10. Water Quality, Drinking / Ground
11. Wetlands / Riparian Zones
12. Wild and Scenic Rivers
13. Wilderness

These resources or values (except item #8) were not identified as issues to be analyzed because: (1) the resource or value does not exist in the analysis area, (2) no site specific impacts were identified, or (3) the impacts were considered sufficiently mitigated through adherence to the S&G's therefore eliminating the element as an issue of concern. These issues are also briefly discussed in Appendix E ("Critical Elements of the Human Environment"). Item #8 is addressed in the Specialist's Reports (Appendix F).

G. Issues to be Analyzed

The ID Team identified the following concern as having sufficient potential affect to warrant more detailed analysis and will be addressed in section IV, "Environmental Consequences" (pg. 9-12) as a key issue:

Impacts to Special Status Plants

This was identified as a key issue because of the additional survey protocol and management recommendations for Survey and Manage botanical species for 1997 actions.

II. ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE

This section describes the No Action and Proposed Action alternatives, and any alternatives considered but eliminated from detailed study. These alternatives represent a range of reasonable potential actions. This section also discusses specific design features that would be implemented under the action alternatives. All action alternatives were designed to be in conformance with the RMP.

A. The No Action Alternative

There would be no entry for the harvesting of timber within the bounds of the project area under this alternative. Harvest would occur at another location within Matrix lands in order to meet harvest commitments.

B. The Proposed Action Alternative

Implementation of the Proposed Action Alternative would result in the harvest of approximately 2390 CCF (hundred cubic feet) of the Roseburg District's FY 1998 harvest commitment of 7.0 MCF (thousand cubic feet or 45 MMBF(million board feet)). A small amount of additional timber could potentially be included as a modification to this project. These additions would be limited to removal of individual trees or small groups of trees that are blown down, injured from logging, or which are a safety hazard, and trees needed to facilitate the proposed action (ex. removal of guyline and tailhold trees). Harvest activities would occur on seven units for approximately 182 acres of commercial thinning and less than one acre of road right-of-way clearcut. Other activities would include: temporary road construction, road renovation and improvement and subsoiling of previously compacted skid trails.

Temporary **road construction** would occur on approximately 535 ft. (0.1 miles) of public land. Approximately 5.1 miles of government road would have **road renovation** (restoring the road back to its original design) and 2.5 miles of government road would have **road improvement** (improving the road beyond its original design). This would consist of installing drainage structures (culverts and ditches), reshaping the subgrade and surfacing with crushed rock.

Timber harvest would consist of a combination of a density management harvest and commercial thinning. **Density Management harvest** (Unit 5A) is designed to open the forest canopy to accelerate the attainment of old growth characteristics. **Commercial thinning** (Units 7A, B, C, D and E and 17A) would be designed to reduce the density of the forest stand (thin) to maintain stand vigor and increase wood quality and to promote increased growth on the remaining trees and recover wood fiber that would ordinarily be lost through natural mortality. The proposed action would require a mix of skyline cable logging, approximately 118 acres or 65%; helicopter logging, approximately 13 acres or 7%; and ground based (tractor) logging, approximately 51 acres or 28%. Helicopter landing locations are expected to be a minimum of one-half acre in size and no larger than one acre.

Firewood cutting and salvaging of logging debris (slash) could occur in landing cull decks. The firewood permit would address specific stipulations. **Subsoiling** would occur on previously compacted skid trails used under this action as well as any new trails created. No **prescribed burning of slash** would occur except the burning of landing slash piles.

C. Project Design Features as part of the Proposed Action

This section describes the project design features (PDF's) which would be incorporated in the implementation of the action alternatives. PDF's are site specific measures, restrictions, requirements or structures included in the design of a project to reduce adverse environmental impacts. These are listed in the RMP (Appendix D, pg. 129) as "Best Management Practices" (BMP's) and in the ROD as "Standards and Guidelines" (S&G's). BMP's are measures designed to protect water quality and soil productivity. S&G's are "... the rules and limits governing actions, and the principles specifying the environmental conditions or levels to be achieved and maintained." (S&G, pg. A-6). The proposed action includes the following PDF's :

1. **To meet the components of the "Aquatic Conservation Strategy (ACS)" (S&G's, pg. B-12):**

a. **Riparian Reserves** (Component #1) would be established. Riparian Reserves consist of the lands incorporating permanently flowing (perennial) and seasonally flowing (intermittent) streams, the extent of unstable and potentially unstable areas, and wetlands. The ROD (C-30) and RMP (pg. 24) specify Riparian Reserve widths equal to the height of two site potential trees on each side of fish bearing streams and one site potential tree on each side of perennial or intermittent nonfish bearing streams. Data has been analyzed from District inventory plots and the height of a site potential tree for the Elk Creek watershed has been determined to be the equivalent of 200 ft. slope distance. Therefore, Riparian Reserve boundaries would be approximately 200 ft. slope distance from the edge of nonfish bearing streams and 400 ft. from fish bearing streams in the project area. (East Elk WA, pg. 1-4). There are no fish-bearing streams in the project area.

1) Silvicultural practices (density management) would be applied within the Riparian Reserves "to control stocking . . . and acquire vegetation characteristics needed to attain Aquatic Conservation Strategy objectives" (RMP pg. 25). The objective is to accelerate

tree growth to promote larger trees and canopies, and provide a future source of large woody debris for stream structure. Approximately 40 acres of Riparian Reserve would be thinned for this purpose.

2) Streambank stability and water temperature would be protected by maintaining a 20 - 180 ft. no cut buffer along all streams.

3) Riparian habitat would be protected from logging damage by directionally felling trees within 100' of streams and yarding logs away from or parallel to the streams (i.e. logs would not be yarded across streams). No road building would take place within the Riparian Reserves. Where logs are yarded across streams they would be full suspended.

b. This project is not in a **Key (Tier 1) Watershed** (ACS Component #2).

c. **Watershed Analysis** (ACS Component #3) as been completed for this watershed (see pg. 2).

d. **Watershed Restoration** (ACS Component #4) in this watershed would be accomplished primarily through timber sale related projects. This would include road decommissioning, road maintenance and Riparian Reserve treatments in second growth stands. This particular project includes watershed restoration through road maintenance and improvement as described in paragraph 2 below. Riparian Reserves would be restored as described in para. 1a(1) above.

2. **To minimize the loss of soil productivity (i.e. limiting erosion, reducing soil compaction, protecting slope stability and protecting the duff layer):**

a. **Measures to limit erosion and sedimentation from roads** would consist of: (1) Maintaining or improving existing roads (Road No. 20-4-32.2, 21-4-5.0, 5.1, 7.0, 7.1, 17.2 and 20.0) to fix drainage and erosion problems. This would consist of maintaining existing culverts, installing additional culverts, and surfacing the road with crushed rock. (2) Building, using and decommissioning temporary roads in the same operating season (i.e. no over-wintering of bare erodible subgrade). When logging is completed, the roadbed would be subsoiled, water barred, blocked and seeded with native species or a sterile hybrid mix depending on availability. (3) Restricting road renovation and log hauling on unsurfaced roads to the dry season (normally May 15 to Oct. 15), however, operations would be suspended during periods of heavy precipitation. This season could be adjusted if conditions are such that no environmental damage would occur (ex. the dry season extending beyond Oct. 15). These are the BMP's (RMP, pg. 136-7) designed to minimize sedimentation and protect water quality.

b. **Measures to limit soil erosion and sedimentation from logging** would consist of: (1) requiring skyline yarding where cable logging is specified. This method limits ground disturbance by requiring partial suspension during yarding (i.e., the use of a logging system

that "suspends" the front end of the log during in-haul to the landing, thereby lessening the "plowing" action that disturbs the soil). In some limited, isolated areas partial suspension may not be physically possible due to terrain or lateral yarding. Excessive soil furrowing would be hand waterbarred. (2) Helicopter logging (Unit 17A) where road building would not be possible. Logs would be lifted vertically off the ground and flown to landing areas on existing roads. (3) Ground based logging would be limited to the dry season as described above.

c. **Measures to limit soil compaction** (RMP, pg. 37) would consist of: (1) limiting ground based logging to the dry season as described in the previous paragraph. (2) Confining ground based activities to designated skid trails as identified in an approved logging plan. New trails would be limited to slopes less than 35% and with skidtrail spacings averaging at least 150 feet apart. Machines would be limited in size and track width to reduce compaction and trail width. Existing skid trails would be used wherever possible. (3) Subsoiling of decommissioned roads, temporary spur roads and skidtrails with a winged subsoiler to mitigate compaction damage. Subsoiling is a practice that ameliorates soil compaction and improves water infiltration by pulling a device known as a "winged subsoiler" with a crawler tractor. Existing skidtrails from previous entries would also be tilled where practical (e.g., tilling saturated or very rocky soils or skid trails with advanced reproduction would not benefit soil productivity and therefore would not be practical). The Authorized Officer (Contract Administrator) may decide that additional isolated minor ground based logging would be necessary. Such proposals may be subject to Interdisciplinary review.

e. **Measures to protect slope stability** would consist of reserving areas that could potentially impact the meeting of ACS objectives (see Appendix D).

3. **To provide for wildlife:**

a. Future nesting and roosting habitat for cavity dwellers would be provided by reserving most existing hard or soft snags. Note: Any snag deemed as hazardous to worker safety could be felled at the discretion of the operator and the Authorized Officer. Such trees would be reserved and left in place as CWD.

b. Most existing CWD (at least 16" in diameter and 16 ft. in length) would be reserved for the habitat of organisms that require this ecological niche (S&G C-40, para. B). This is in the form of blowdown trees and logs remaining from previous logging.

4. **To protect and enhance stand diversity:**

a. All Pacific yew trees would be reserved.

b. Small hardwood pockets and wet areas (< one ac.) would be retained.

c. All tree species currently represented in the stand would continue to be represented in the stand after the harvest. All old, large conifers remnant from the previous stand would be retained

d. Snags and CWD would be reserved as described in paragraph three above.

5. To prevent accidental spills of petroleum products or other hazardous materials:

Hazardous materials (particularly petroleum products) would be stored in durable containers and located so that any accidental spill would be contained and not drain into riparian areas. All landing trash and logging materials would be removed. Accidental spills or discovery of the dumping of any hazardous materials would be reported to the Sale Administrator and the procedures outlined in the “Roseburg District Hazardous Materials (HAZMAT) Emergency Response Contingency Plan” would be followed.

6. To prevent the spread of noxious weeds:

Logging equipment would be cleaned prior to entry on BLM lands to remove weed seeds (BLM Manual 9015 - Integrated Weed Management).

7. To protect the residual stand and promote stand health:

a. As much as possible trees that would most likely survive logging and overall improve the stand condition and health would be selected for retention.

b. No falling and yarding would be permitted from April 15 through July 15 when the sap is up in the trees and damage due to bark slippage could occur. If the Authorized Officer determines that, based on local conditions, excessive damage would not occur this date could be adjusted.

c. Yarder size would be limited to match the size of the yarder to the size of the timber in order to minimize damage from an overly large yarder.

D. Alternatives Considered but Eliminated

There were no other alternatives considered by the ID Team during the formulation of this project.

III. AFFECTED ENVIRONMENT

This section describes the existing environment and forms a baseline for comparison of the effects created by the alternatives under consideration. Appendix F (Analysis File) contains Specialist's Reports with supporting information for this analysis.

This project lies within the Oregon Coast Range Physiographic Province. The affected environment for this province is described in the FSEIS on page 3&4-21.

A. Stand Description

The proposed project lies in an area that is a transition between the interior valley and the grand fir zone. Douglas-fir is the predominant species within the analysis area because of fire. All of the stands originated about 60 years ago following logging. Some scattered, large, old conifers that were left following logging still remain. These remnants may have been left as seed trees or because they were considered of low commercial value at the time of logging. All of the large old trees found were Douglas-fir. The predominant conifer species is Douglas-fir with grand fir, incense-cedar, western red cedar and western hemlock as common associates. Hardwoods include madrone, chinkapin, big leaf maple, dogwood and red alder. The most prevalent understory shrubs are vine maple and ocean spray. Sword fern, salal and Oregon grape are common on the forest floor. Canopy closure is estimated at 50 to 80 percent. Many of the hardwoods are being shaded out, but occasionally a large hardwood can be found in a dominant canopy position. These are highly productive areas, capable of producing Douglas-fir with heights over 120 feet and diameters over 15 inches at 50 years age. At this time there are no plantation failures in this area.

B. General Site Description

The general **topography** is characterized by hills with overall moderate slopes (15 to 60 percent) which are dissected by two prominent creeks (Pheasant and Ward Creeks). The proposed units are predominantly south and west facing. Elevation ranges from about 500 to 1000 feet above sea level.

The **climate** is wet, characterized by mild winters and cool, relatively dry summers. Precipitation in the form of rain averages about 50 inches a year and occurs mostly in the winter. The precipitation that fell between October 1995 to May 1996 was about 60 inches. Temperatures average 70 degrees F in the summer and 40 degrees F in the winter.

C. Affected Resources

Botanical - A botanical inventory of all proposed units has been conducted. There have been no Special Status Plants (SSP) observed in any of the proposed units to date.

Cultural Resources - No known cultural resources exist in the project area.

Fisheries - There are two major fish-bearing streams in the proposed project: Ward and Pheasant Creek of the Umpqua River drainage. ODF&W aquatic habitat surveys are available for Pheasant Creek. The habitat rates as "fair". Low amounts of large woody debris (LWD) and high amounts of fine sediment appear to be limiting habitat variables. Population assessments were done in Ward Creek and Pheasant Creek in 1996 as part of the East Elk WA. Pheasant Creek had low density of fish of any species. Ward Creek had a diverse fish community represented by both salmonid and non-salmonid species and several age classes.

Hydrology - The project is in the Ward and Pheasant Creek basins of the Umpqua River drainage and part of the South Fork of the Siuslaw River basin. The stream density is 2.4 miles/square mile, and the road density is 5.3 miles/square mile. The Beneficial Uses are predominately downstream fisheries, other aquatic life, and wildlife. The Oregon Department of Environmental Quality (DEQ) does not identify Ward or Pheasant Creeks specifically since they are 'small' tributaries to Elk creek, however, BLM surveys show siltation as the main concern.

Soils - The soils in this area are developed primarily from sandstone and siltstone parent material of the Spencer and Flourney formation. They range from shallow to very deep. Moderately deep-shallow soil complexes and occasional rock outcrops are dominant features on slopes exceeding 60 percent. Dominant soil textures are loamy-skeletal and clayey with the former concentrated on the steeper slopes (East Elk WA). The project area was been impacted by ground based yarding in the past (Units 5A, 7A, 7B and 7D). Residual skid trail compaction appears to be overall moderate.

Wildlife - There are no known sites for marbled murrelets, spotted owls or other listed T&E species in the proposed project. One Bureau Sensitive species, the red-legged frog, and associated egg masses, were reported early in the year at a small vernal pond formed in one of the access roads in section 5. One adult red-legged frog was observed near the center of proposed unit 5A. Habitat is suitable for and within the range of the red tree vole, however, indications of red tree vole use or occurrence were not observed. All sale units are within zone two of marbled murrelet habitat.

IV. ENVIRONMENTAL CONSEQUENCES

This section forms the scientific and analytical basis for the comparisons of the alternatives. The probable consequences (impacts, effects) each alternative would have on selected resource(s) are described. This section is organized by the alternatives and the effects on resources by the key issue identified in section I paragraph G as well as the direct (effects caused by the action and occur at the same place and time), indirect (effects caused by the action and occur later in time or farther removed in distance) and cumulative (impacts of the action when added to other past, present and reasonably foreseeable future actions) on the other resource values. The environmental consequences for these resources are more fully analyzed in Appendix F (Analysis File). This Appendix contains Specialist's Reports and the supporting information for this analysis. The EIS and FSEIS analyzes the environmental consequences in a broader and more detailed context. This EA does not attempt to reanalyze all possible impacts that have already been analyzed in these umbrella documents but rather to identify the particular site specific impacts that could reasonably occur. NOTE: The Biological Assessment for the Endangered Species Act consultation contains a detailed analysis of how this project complies with the Aquatic Conservation Strategy Objectives and is contained in Appendix F.

Some irreversible and irretrievable commitment of resources would result from the implementation of this project. Crushed rock from quarries would be committed to reconstruction of the road system. An irretrievable commitment of the use of fossil fuels in management activities, would result in either of the action alternatives.

A. No Action Alternative:

Changes in **stand structure and species composition** would result from natural processes including growth and competition for growing space, fire, disease, and insects. The area would naturally regenerate following disturbance events. The potential production of wood volume and increased wood quality is reduced, and the time required to develop effective old growth habitat may be increased, when density management is not undertaken. A study area for the "Density Management Studies" would be lost. Wood volume that would be lost to mortality would not be recovered and the benefits of harvest for raw materials for mills and present and future employment would be reduced.

In-unit **erosion** would continue to be insignificant. Haul route roads would not receive the impacts of the proposed operation (wear and maintenance impacts to erosion and sedimentation). Mass movement risks would remain unchanged (considered low to moderately low). The unsurfaced 20-4-32.2 and 21-4-5.1 roads and its spurs would continue to experience erosion and drainage problems aggravated by occasional vehicle traffic. A percentage of this sediment would reach the tributary of the South Fork of the Siuslaw which flows through Unit 5A. The unsurfaced 21-4-5.0 road would remain stable to erosion and not driveable. **Compaction** and resultant soil productivity loss from past ground-based operations would continue to heal very slowly (current compaction in skid trails is commonly moderate). **Streams** that have raw banks, such as those in Units 5A and 7C would continue to erode and move towards an equilibrium and stable form.

Key Issue - Impacts to Special Status Plants

This Alternative would result in no forest management activities in the proposed project area. Barring any catastrophic events such as wildfire or storms, the forest stands would continue to support a variety of vascular and non-vascular species associated with early-successional forest stands.

B. Proposed Action Alternative:

The following paragraph discusses the direct and indirect impacts of the proposed action.

Key Issue - Potential Impacts to Nonvascular Plants

Proposed ground-based tractor yarding along designated trails, and spur road construction would disturb the soil profile in these areas. The proposed action would have **direct** (short-term) **impacts** to vegetation in and along the skid trails and spurs that would likely be disturbed. Disturbance of this nature would likely increase the risk of noxious weed invasion

in these areas. Soil disturbance from ground-based yarding could negatively impact protection buffer fungi, if present, in or along the proposed spur roads and skid trails. Short term impacts to moss habitat in the stand, including lower humidity levels, higher temperatures, and greater rates of desiccation resulting from elevated wind speeds and direct sunlight, would likely occur although the level of impact would be unquantifiable.

The **indirect** (long-term) **impacts** resulting from the Proposed Action on non-vascular plants is unknown. The proposed action would likely result in the creation of a more vigorous and diverse understory plant community. Habitat for protection buffer mosses, if present, would likely increase in the long-term because of the anticipated recruitment of large diameter coarse woody debris in the stand.

The Forest Stand - Scattered large green conifers and snags, and coarse woody debris would be retained. Future stands would continue to produce wood volume while preserving a biological legacy in large green conifers, large snags, and down logs. Probably the most important indirect consequence is the larger diameter attained with the thinning.

Fisheries - The S&G's of the ROD and specific PDF's (i.e. 20-180 ft no cut buffer on all streams, temporary roads and road improvements) should prevent any direct impacts to the fisheries resources.

Hydrology - The trees remaining in the Riparian Reserves would protect streambank stability, provide shade, and promote litter fall. The integrity of the riparian microclimate shouldn't change as a functionally continuous canopy would remain intact. Stream shading is not a concern for intermittent channels, because they dry up in the summer. It is not anticipated that stream temperature would increase due to the PDF's of the project. The two short spur roads to be constructed are temporary and would be subsoiled after logging is completed, therefore there would be no increase in road density.

Soils (Direct Impacts) - Erosion and sedimentation in the short run would be greater than current levels (no action) due to expected first wet season flush of sediment from loosened earth in haul roads and in skid trails and skyline yarding trails. This level should not be significant given proper implementation of the PDF'S. Erosion and sediment levels thereafter should quickly drop to pre-harvest levels. The exception would be if landslides greater than about 0.1 acre in size would occur.

Tractor yarding under the action alternative could add to the existing compaction in Units 5A and 7D. Compaction on existing trails would be increased while some new trail would likely be created. This would equate to about 5 to 6 percent of the ground-based area of this thinning being utilized in trail (about a 3 percent soil productivity loss). The subsoiling PDF, if done satisfactorily, would reduce the soil productivity loss attributable to this thinning to about 0.6 percent.

An **indirect impact** would be the possible destabilization of some slopes. The risks of landslides would be slightly elevated over the no action alternative given the implementation of the PDF'S and recommended mitigation. The risks would be greatest for the TPCC classified FGR Units 7C, 7E and the north slope of 17A (see Soils Report). PDF's have been included in the project to lessen potential impacts (see Appendix D).

Wildlife - In general, commercial thinning harvest within the proposed units would not impact any known sites of T&E species. Harvest would benefit species through increased forage availability and development of intermediate vegetative layers. Maintenance of the dominant trees in the proposed harvest units would maintain suitable habitat components over time for animals such as larger raptors, bats and other species that utilize structure created by larger trees.

C. Cumulative Impacts Analysis

The following paragraph discusses the cumulative impacts.

Key Issue - Potential Impacts to Nonvascular Plants

Cumulative impacts to this taxonomic group cannot be adequately assessed because of the lack of inventory data in the watershed.

Fisheries - Cumulative impacts are hard to quantify and usually show up as alterations in the flow and sediment regimes (see the hydrology and soils reports).

Hydrology - Permanent roads are already in place from previous thinning or timber sales in these three sections. Research done by Wemple, Grant, and Jones suggests roads may function as extensions of the drainage network by contributing ditch-line flow to channels. Generally, roads intercept subsurface flow and route it to the surface by altering the infiltration capacity and "normal" groundwater flow patterns. Due to use of temporary roads and the improvements to the drainage of existing roads, the proposed action should not increase peak flows due to extensions of the drainage network.

Soils - The incremental input of erosion and sedimentation by this thinning would be small and temporary. The long term input of sediment into the system in Unit 5A could be less than under the no action alternative because of road improvements. This would mostly benefit the Siuslaw River side of the divide. The Upper Pass Creek portion has a large percentage of its area on the more gentle slopes, therefore past ground-based activity and the associated compaction was very extensive leading to a significant cumulative impacts to soil productivity. Compaction can take 40 or more years to heal. The residual soil productivity loss is very likely still serious resulting in increasing peak flows in the these watersheds due to less soil infiltration. This could alter stream morphology and contribute to streambank erosion and downcutting. The net cumulative effect of the action alternative on soil productivity would be negligible and might actually be a slight improvement with proper subsoiling.

Wildlife - Habitat modifications due to thinning or density management would accelerate the existing stands towards old growth structure and therefore benefit species dependent on old growth structure or conditions in the future. The density management study area would create a more diverse type of habitat than is found in most of the managed stands in the area of the study.

V. CONTACTS, CONSULTATIONS, AND PREPARERS

A. Agencies, Organizations, and Persons Consulted

The Agency is required by law to consult with the following federal and state agencies (40 CFR 1502.25):

1. **Threatened and Endangered Species Section 7 Consultation** - The Endangered Species Act of 1973 requires consultation to ensure that any action that an Agency authorizes, funds or carries out is not likely to jeopardize the existence of any listed species or destroy or adversely modify critical habitat. The required ESA consultation was accomplished with the **US Fish and Wildlife Service** (USF&WS) and the Biological Opinion (BO) was received on May 13, 1997. The USF&WS concluded that the proposed action is ". . . not likely to jeopardize the continued existence of the bald eagle, peregrine falcon, spotted owl or murrelet or adversely modify designated critical habitat for spotted owl or murrelets" and an "Incidental Take (i.e., "any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency . . . ") Statement" was issued. The USF&WS has stipulated terms and conditions for the Incidental Take having to do with seasonal restrictions for the Northern spotted owl and the Marbled murrelet. The Roseburg District Biological Assessment for ESA consultation has been submitted to the **National Marine Fisheries Service** (NMFS). The Biological Assessment was a "may effect, likely to adversely affect" for Umpqua River cutthroat trout, Oregon Coast steelhead trout and Oregon Coast coho salmon. A Biological Opinion has not been received from the NMFS.
2. **Cultural Resources Section 106 Consultation** - Consultation as required under section 106 of the National Historic Preservation Act with the **State Historical Preservation Office** (SHPO) was completed on June 25, 1996 with a "No Effect" determination.

B. Public Notification

1. Notification was provided to affected **Tribal Governments** (Confederated Tribes of the Coos, Lower Umpqua and Siuslaw; Grande Ronde; Siletz; and the Cow Creek Band of Umpqua Indians). No comments were received.
2. Ten letters were also sent to **adjacent or nearby landowners**. No comments were received.
3. This project was included in the Roseburg District Planning Update (Winter 1996-7 and Spring 1997) going to nearly 200 addressees. A letter with comments was received from Umpqua Watersheds (Francis Eatherington).

4. Notification has been provided to certain **State, County and local government** offices (See Appendix G - Public Contact).

5. A 30-day **public comment period** will be established for review of this EA. A Notice Of Availability will be published in the News Review. This EA and its associated documents will be sent to all parties who request them. If the decision is made to implement this project, a notice will be published in the News Review. If the decision is made to implement this project, a notice will be published in the News Review.

C. List of Preparers

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