## ENVIRONMENTAL ASSESSMENT

BLM

Tillamook Resource Area, Oregon

# The Hoag Pass Projects

**Commercial Density Management Thinning,**
**Fish and Wildlife Habitat Enhancement,**
**and Roadside Hardwood Removal for Road Maintenance**

April 2006

**BLM/OR/WA/AE-06/020+ 1792**

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

Environmental Assessment Number OR-086-06-05

# The Hoag Pass Projects

## Commercial Density Management Thinning, Fish and Wildlife Habitat Enhancement, and Roadside Hardwood Removal for Road Maintenance

Environmental Assessment Number OR-086-06-05

***United States Department of Interior***
***Bureau of Land Management***
***Oregon State Office***
***Salem District***
***Tillamook Resource Area***
***Tillamook County, Oregon***

**April 17, 2006**

Responsible Agency: Bureau of Land Management

Responsible Official: Brad Keller

Tillamook Field Manager
Tillamook Resource Area
4610 Third Street
Tillamook, OR 97141
(503) 815-1100

**Abstract:** The Bureau of Land Management proposes to conduct three different projects in the Late-Successional Reserve, Adaptive Management Area and Riparian Reserve land use allocations. The first project is a commercial density management thinning of approximately 862 acres. The second project is a fish and wildlife habitat enhancement treatment on approximately 911 acres. The third project would remove hardwoods along approximately 9 miles of road. These actions would occur on federal land in portions of T.3S., R.7W., sections 13, 14, 21, 22, 23, 24, 25, 26, 27, 28, 34, 35, and 36; T.3S., R.6W., sections 19, 30, and 31; Willamette Meridian.

## TABLE OF CONTENTS

## TABLE OF CONTENTES FOR FIGURES, PHOTOS, TABLES, AND GRAPHS

# FINDING OF NO SIGNIFICANT IMPACT

## Introduction

The Hoag Pass Projects Environmental Assessment (EA) documents the environmental analysis of the proposed projects. The EA is attached to and incorporated by reference in this Finding of No Significant Impact determination (FONSI). The EA analyzes commercial density management on approximately 862 acres of 30-98 year old, relatively dense Douglas-fir stands; Fish and Wildlife habitat enhancement activities on 911 acres of stands and along 1.9 miles of stream segments that would not be treated with density management; and about 9 miles of roadside hardwood removal. The project areas include T.3S., R.7W., sections 13, 14, 21, 22, 23, 24, 25, 26, 27, 28, 34, 35, and 36; T.3S., R.6W., sections 19, 30, and 31; Willamette Meridian.

The EA and FONSI will be made available for public review ***April 19, 2006*** to ***May 19, 2006***. The notice for public comment will be published in a legal notice by the Tillamook Headlight Herald newspaper. Comments received by the Tillamook Resource Area of the Salem District Office, 4610 Third Street, Tillamook, Oregon, 97141, on or before ***May 19, 2005*** will be considered in making the final decisions for these projects.

## Finding of No Significant Impact

Based upon review of the Hoag Pass Projects EA and supporting project record, I have determined that these projects are not major federal actions and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. There are no site specific impacts that would require supplemental/additional information to the analysis done in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS). Therefore, an environmental impact statement is not needed. This finding is based on the following discussion:

**Context.** The proposed projects are site-specific actions directly involving a total of 1,773 acres of BLM administered land, along with actions occurring on various haul routes; and treatments along 9 miles of BLM-administered roads. These actions by themselves do not have international, national, region-wide, or state-wide importance.

The discussion of the significance criteria that follows applies to the intended actions and is within the context of local importance. The EA details the effects of the action alternatives; none of the effects identified, including direct, indirect and cumulative effects, are considered to be significant and do not exceed those effects described in the RMP/FEIS.

**Intensity.** The following discussion is organized around the Ten Significance Criteria described in 40 CFR 1508.27. The discussions below apply to all three projects contained within the Hoag Pass Projects Environmental Assessment.

1. **Impacts may be both beneficial and adverse.** Due to the proposed projects design features, the most noteworthy predicted effects include: (1) acceleration of the development of some late-successional forest structural features on about 862 acres using density management and an additional 911 acres of fish and

wildlife habitat enhancement projects. These activities include the development of large trees, gaps in the canopy, snags and down wood, various levels of over story tree densities; (2) enhancement of the overall level of diversity in the area; (3) consistency with the ACS (Aquatic Conservation Strategy) objectives; and (4) no loss in population viability of special status or special attention species (also see significance criteria #9 below); (5) slight, short term increases in sediment are anticipated from road construction, road improvement and culvert removal, and timber harvest activities; (6) no impacts to water temperature, streamflows or stream channel stability; (7) cumulative impacts to spotted owl dispersal habitat and;(8) social and economic benefits to the local communities through the supply of timber to local mills and some contract work associated with the wildlife and fish habitat enhancement project.

None of the environmental effects disclosed above and discussed in detail in Chapters 2, 3 and 4 of the EA and associated appendices are considered significant, nor do the effects exceed those described in the RMP/FEIS.

2. **The degree to which the selected alternative will affect public health or safety.** Public health and safety were not identified as an issue. The proposed projects are comparable to other density management, fish and wildlife habitat enhancement, and road maintenance projects which have occurred within the Salem District with no unusual health or safety concerns.

3. **Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas**. There are no park lands, prime farm lands, or wildernesses located within the project area (EA, Appendix 2).

There are three identified cultural resource sites that are within the general vicinity of the projects. One is a trail that has been determined to be not historically significant; the other two are homestead sites. The homestead sites are not located within any of the treatment areas, and would not be disturbed. Several design features have been incorporated to protect the trail, including varied buffer widths, the exclusion of yarding corridors, and required slash pullback.

There are no federally designated Wild and Scenic Rivers within any of the three project areas; however the Nestucca River has been determined to be eligible for inclusion as a recreational river under the National Wild and Scenic Rivers System. The projects preserve the existing characteristic of the landscape within sight distance from the river.

Under the design features for the density management treatments, all identified wetland and riparian areas would be buffered to protect resource values. Activities associated with the proposed fish and wildlife enhancement project are designed to accelerate the development of some late-successional forest structural features and are not predicted to impact wetlands. There would be no impacts to wetlands as a result of implementing the roadside hardwood removal project.

The proposed density management thinning could potentially use existing roads as haul routes that are located within the Nestucca River and the Sheridan Peak ACECs. This would cause no adverse impacts to the vegetation or scenic qualities within those areas. Portions of the Fish and Wildlife Habitat Enhancement Project areas are within the Nestucca ACEC. Protection and/or enhancement of wildlife

resources comply with management objectives within the Nestucca River ACEC Management Plan. A portion of the Roadside Hardwood Removal for Road Maintenance Project occurs within the Nestucca ACEC primary zone located along the first ¼ mile on Hoag Pass Road. Some hardwood removal is acceptable according to the current Nestucca ACEC management Plan.

4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.** Extensive scoping of the proposed projects resulted in only three project specific comment letters, with a total of 18 comments, and one request for a site visit. The disposition of public comments is contained in Appendix 1 of the EA.

The effects of the proposed projects on the quality of the human environment were adequately understood by the interdisciplinary team to provide an environmental analysis. A complete disclosure of the predicted effects of the proposed projects is contained within Chapters 2, 3 and 4 of the EA and associated appendices.

5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** The proposed projects are not unique or unusual. The BLM has experience implementing similar projects in similar areas and have found effects to be reasonably predictable. The environmental effects to the human environment are fully analyzed in the EA. There are no predicted effects on the human environment which are considered to be highly uncertain or involve unique or unknown risks.

6. **The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.** The proposed projects do not set a precedent for future actions that may have significant effects, nor does they represent a decision in principle about a future consideration. Any future projects will be evaluated through the NEPA (National Environmental Policy Act) process and will stand on their own as to environmental effects.

7. **Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.** The interdisciplinary team evaluated the proposed projects in context of past, present and reasonably foreseeable actions Appendix 3. Although some cumulative effects have been identified (spotted owl dispersal habitat) no significant cumulative effects are predicted. A complete disclosure of the effects of the action alternatives is contained in Chapter 2, 3 and 4 of the EA.

8. **The degree to which the action may adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.** The proposed projects will not adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor will the proposed projects cause loss or destruction of significant scientific, cultural, or historical resources (EA, Appendix 2).

9. **The degree to which the action may adversely affect an endangered or threatened species or its designated critical habitat under the Endangered Species Act of 1973.** In accordance with regulations

pursuant to Section 7 of the Endangered Species Act of 1973, as amended, informal or formal consultation with the USFWS concerning the potential impacts of the Hoag Pass Density Management Project, Fish and Wildlife Habitat Enhancement Project and Roadside Hardwood Removal project upon the spotted owl, marbled murrelet and bald eagle would be completed by including the appropriate project within the annual programmatic habitat modification biological assessment prepared by the interagency Level 1 Team (terrestrial subgroup) for the North Coast Province. The density management is consistent with definitions for *light to moderate thinning* as found in the programmatic BA. Should the project not be implemented within FY 2007-08 as currently planned but rather in a subsequent year, the project(s) would likely be resubmitted for inclusion in the next appropriate programmatic consultation. If the project is determined to not be in compliance with the standards of the programmatic consultation, the project would be changed to be in compliance with the programmatic consultation or a project-specific consultation would be conducted. In either case, all of the appropriate Terms and Conditions of the appropriate Biological Opinion would be incorporated.

Any ESA consultation with USFWS required on the subsequent maintenance of trees planted as a part of this project would likely be accomplished by inclusion of the maintenance work within the appropriate Programmatic Biological Assessment for Activities in the North Coast Province which might disturb bald eagles, northern spotted owls or marbled murrelets which is prepared by the North Coast Province Interagency Level 1 Team.

In accordance with regulations pursuant to Section 7 of the Endangered Species Act of 1973, as amended, there are no impacts to listed or proposed fish species within the action areas.

10. **Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.** The proposed projects do not violate any known Federal, State, or local law or requirement imposed for the protection of the environment. The EA and supporting Project Record contain discussions pertaining to the Endangered Species Act, National Historic Preservation Act, Clean Water Act, Clean Air Act, Coastal Zone Manage Act, Executive Order 12898 (Environmental Justice), Oregon Scenic Waterways Act, and Executive Order 13212 (Adverse Energy Impact). State, local, and tribal interests were given the opportunity to participate in the environmental analysis process. Furthermore, the proposed projects are consistent with applicable land management plans, policies, and programs.

Prepared by: _____ 4-14-06
Steve Bahe — Date
Team Leader

Reviewed by: _____ 4/12/06
Bob McDonald — Date
NEPA

Approved by: _____ April 14, 06
William B. Keller — Date
Tillamook Field Manager

# HOAG PASS ENVIONMENTAL ASSESMENT

## 1.0 INTRODUCTION

*Project Scope* - The Hoag Pass Environmental Assessment covers a subwatershed-wide forest management and restoration effort proposed by the Tillamook Resource Area. It contains three distinct project types which collectively would help to move the subwatershed toward the Desired Future Condition. These projects include a commercial density management thinning project, a fish and wildlife habitat enhancement project and a project removing roadside hardwoods to reduce road maintenance problems**.**

The projects presented in this Environmental Assessment are the products of the Tillamook Resource Area's integrated planning processes which were conducted at three scales and utilized an interdisciplinary planning approach. The largest scale of planning considered all BLM lands within the Tillamook Resources Area and applied eleven rating criteria which reflected various management directions, concerns or objectives (e.g. Key Watershed Status, Clean Water Act, Land Use Allocations, Silvicultural Needs Assessment, and Transportation - including both access issues and restoration needs). This analysis resulted in the identification of the Nestucca Watershed as a high priority for management. The second scale of planning looked at eight APUs (Activity Planning Units) roughly correlated to 6$^{th}$ field watersheds within the Nestucca Watershed. Nine different, Nestucca-specific rating criteria were applied to the APUs (e.g. Key Watershed Status, forest restoration potential and transportation system concerns) to help prioritize planning efforts within the watershed. This analysis resulted in the Hoag Pass APU being identified as one of the top three planning priorities within the watershed. The final scale of planning considered all lands within the Hoag Pass APU, and in light of APU-specific Planning Issues compared current resource conditions to the management objectives and Desired Future Conditions of the area. The projects included in this Environmental Assessment were identified during this Activity Planning Process.

## 1.1 Project Location

The project areas are approximately 22 miles southeast of the town of Tillamook, Oregon, in the upper reaches of the Nestucca River watershed. (Please refer to Figure 1). The project areas include T.3S., R.7W., sections 13, 14, 21, 22, 23, 24, 25, 26, 27, 28, 34, 35, and 36; T.3S., R.6W., sections 19, 30, and 31; Willamette Meridian.

The proposed project areas are located on Oregon and California Railroad Land (O & C Lands), within the Northern Coast Range Adaptive Management Area, overlain by Late-Successional Reserve (AMR), and Riparian Reserve (RR) land-use allocations. The projects could potentially use existing roads as haul routes which are located in the Nestucca River and the Sheridan Peak ACECs.

The project locations are within designated critical habitat for the marbled murrelet and the northern spotted owl (both federally threatened species), Essential Fish Habitat for coho and chinook and the Upper Nestucca Tier 1 Key watershed. The Nestucca River has been determined to be eligible for inclusion as a recreational river under the National Wild and Scenic Rivers System and is currently designated as a State Scenic Waterway managed under the jurisdiction of the Oregon Parks and Recreation Department.

Approximately 39% of the Federal land within the Nestucca 5$^{th}$ field watershed is 80-years-old or older. Many of the areas proposed for Fish and Wildlife Habitat Enhancement or Density Management are located within late-successional forests specifically identified within the 15% Analysis Documentation (as updated 11/15/99) that was completed to assure conformance with the 15 percent Retention Standard and Guideline (Salem District RMP - pg. 48). The proposed projects are not expected to compromise those late-successional habitat features; the projects were designed to protect current habitat features and/or promote the continued development of late-successional habitat conditions.

This page intentionally left blank

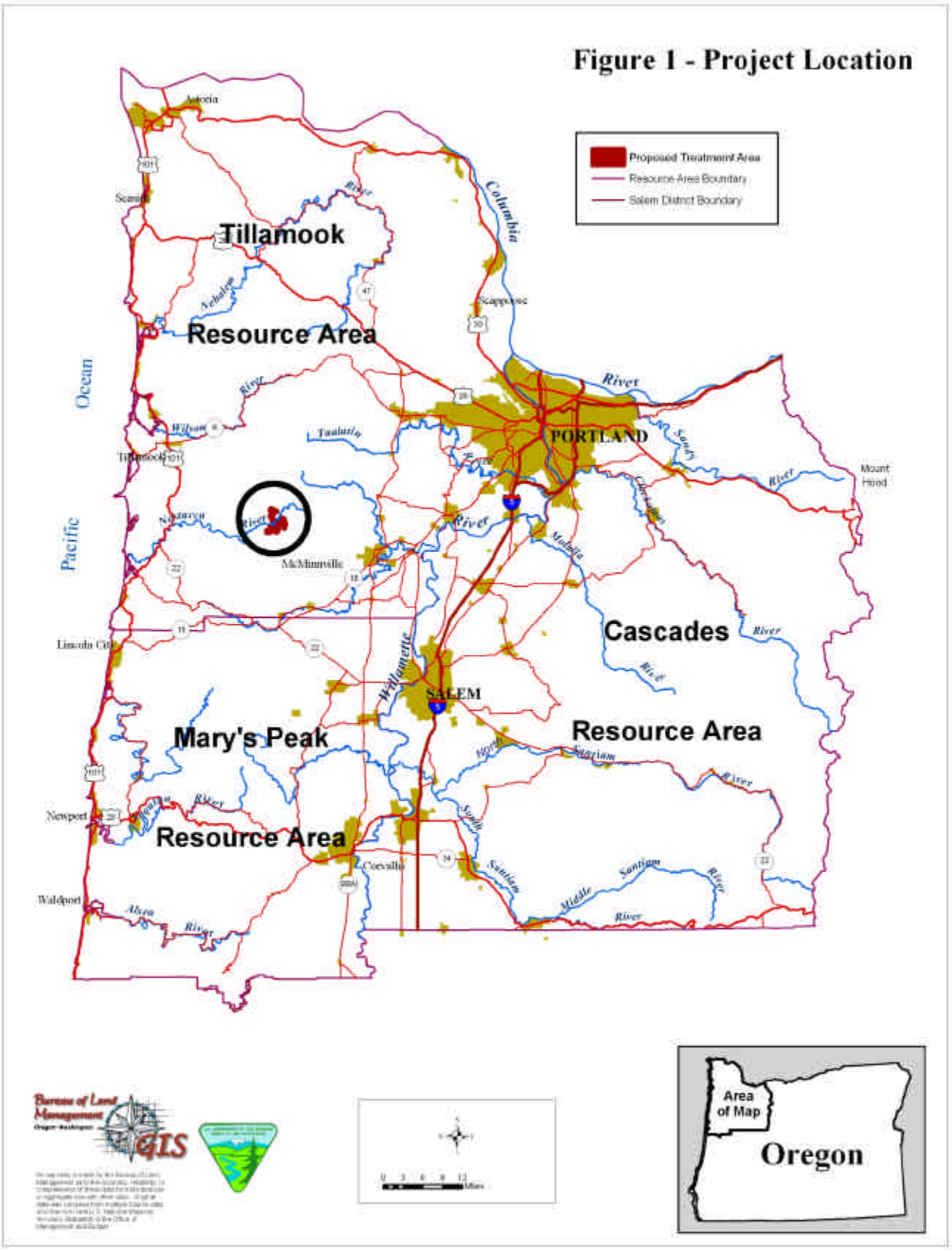


Figure 1 - Project Location
Proposed Treatment Area
Resource Area Boundary
Salem District Boundary
Tillamook
Resource Area
Mary's Peak
Resource Area
Cascades
Resource Area
PORTLAND
SALEM
McMinnville
Lincoln City
Newport
Waldport
Corvallis
Tillamook
Astoria
Scappoose
Mount Hood
Ocean
Pacific
Columbia
Nehalem River
Wilson River
Trask River
Tualatin River
Yamhill River
Nestucca River
Siletz River
Yaquina River
Alsea River
Willamette River
Santiam River
North Santiam River
South Santiam River
Middle Santiam River
Molalla River
Clackamas River
Sandy River
Bureau of Land Management
GIS
Area of Map
Oregon

This page intentionally left blank

## 1.2 Conformance with Land Use Plans, Policies and Programs

The proposed projects are in conformance with the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP) and tiers to the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (FEIS).

The proposed projects are also in conformance with 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 Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*, April 1994 ("Northwest Forest Plan"); *Nestucca Watershed Analysis*, October 1994; *Northern Coast Range Adaptive Management Area Guide*, January 1997; *Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area*, January 1998 (LSRA); *Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines*, January, 2001; *Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource Management Plans for Nineteen National Forests Within the Range of the Northern Spotted Owl - Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy*, March 2004; the *Coastal Zone Management Act* of 1974, as amended and the *Endangered Species Act* of 1972, as amended (ESA).

Tillamook Resource Area is aware of the August 1, 2005, U.S. District Court order in Northwest Ecosystem Alliance et al. v. Rey et al. which found portions of the *Final Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (January, 2004) (EIS) inadequate. Tillamook Resource Area is also aware of the recent January 9, 2006, Court order which:

- Set aside the 2004 Record of Decision To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern spotted Owl (March, 2004) (2004 ROD) and

- Reinstated the 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines (January, 2001) (2001 ROD), including any amendments or modifications in effect as of March 21, 2004.

The order further directs "Defendants shall not authorize, allow, or permit to continue any logging or other ground-disturbing activities....unless such activities are in compliance with the provisions of the 2001 ROD (as amended or modified as of March 21, 2004)".

The litigation over the amendment that eliminated the Survey & Manage mitigation measure from the Northwest Forest Plan does not affect the Hoag Pass Projects. This is because biological surveys for Survey & Manage species have been completed that meet the 2001 protocol (2001 ROD as amended or modified as of March 21, 2004). Therefore, these projects comply with the Northwest Forest Plan prior to that amendment. Even though the Survey & Manage program had been eliminated, in fact the Tillamook Resource Area conducted surveys and provided management prescriptions consistent with the former Survey & Manage survey protocols and management recommendations anyway.

Therefore, based on the preceding information regarding the status of surveys for Survey & Manage wildlife and botany species, it has been determined that the Hoag Pass Projects comply with the provisions of the 2001 ROD, as amended or modified as of March 21, 2004. For the foregoing reasons,

these projects are in compliance with the 2001 ROD as stated in Point (3) on page 14 of the January 9, 2006, Court order.

## 1.3 Permits and Approvals Required

The following Biological Opinions and/or Letters of Concurrence would be required from the appropriate Regulatory Agency prior to implementation of these projects.

- Biological Opinion from the U.S. Fish and Wildlife Service for *Formal and Informal consultation on projects within the North Coast Province which may modify the habitat of bald eagles, northern spotted owls, and marbled murrelets* (Habitat Modification B.O.)

- Biological Opinion from the U.S. Fish and Wildlife Service for *Formal and Informal consultation on projects within the North Coast Province which may disturb bald eagles, northern spotted owls, and marbled murrelets* (Disturbance B.O.).

- Consultation for Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation and Management Act would be requested as appropriate for populations of coho and chinook that are located within the project area(s).

Proposed haul routes needed to implement the Density Management Project are covered by existing road use permits. New construction on private and/or ODF land would require the approval of crossing plats. Preparation and approval of License Agreements would be needed for use of non-BLM controlled roads.

## 1.4 Decisions to be Made

The Tillamook Field Manager is the official responsible for deciding whether or not to prepare an Environmental Impact Statement (EIS), and whether to approve the Hoag Pass Density Management Thinning, Fish and Wildlife Habitat Enhancement, and/or the Roadside Hardwood Removal for Road Maintenance projects as proposed, not at all, or to some other extent.

## 1.5 Consultation

The proposed actions would be implemented consistent with the Terms and Conditions of the associated Biological Opinions (BOs) and/or Letters of Concurrence (LOC) from the regulatory agencies. Magnuson-Stevens Fishery Conservation and Management Act (MSA) consultation would be conducted if necessary.

# 2.0 PROJECT 1 - Density Management Thinning

This Environmental Assessment discloses the predicted environmental effects of four alternatives: Alternative 1 (Proposed Action) and Alternative 2 (No Action), and Alternatives 3 and 4 (Action Alternatives). The Proposed Action would be implemented through three commercial timber sales in 2007 and 2008; and service contracts.

Density management consisting of thinning anticipated to be offered for sale would occur on approximately 862 acres. The density management would include variable spacing with the retention of larger diameter trees. Coarse Woody Debris (CWD) would be created as snags and down logs within most of the thinning units. There would be approximately 12 miles of road that would be reconstructed and about 1.4 miles of new construction to accomplish the treatment. Planting may occur in patch cuts and in decommissioned roads and landings. Slash disposal may be incorporated into the project if needed.

## 2.1 Purpose of and Need for Action

Historic management practices in the area have resulted in many stands that are generally quite uniform in stand structure and composition, and are relatively dense. Over 1,000 acres of mid-seral stands in the area were commercially thinned in the late 1960s and 1970s; however the thinning was light and uniform. High stocking levels have resulted in poor root and crown development, these conditions reduce resiliency and can increase disease levels and resulting mortality. A relatively high proportion of the stands in the project area have a marked lack of coarse woody debris, both in snags and downed logs, especially in the earlier decay classes. Some of the mid-seral stands have an understory component, but it is developing very slowly due to overstory density.

The desired condition for stands proposed for treatment is where the stands would be set on a trajectory to obtain some late-successional forest structural features sooner than they would without treatment. Some of the features include: large trees (some with large limbs, and long wide crowns), green trees with characteristics desirable for wildlife such as broken or dead tops, clumps and gaps in the canopy resulting in various levels of overstory tree densities and understory development, down wood in various states of decay, and large snags which are used by a wide variety of species including flying squirrels - the main prey species of spotted owls. In addition, the stands would have developed windfirmness and stability so that future density management treatments could continue, if such treatments were warranted; and the stands would have increased resilience to the impacts of diseases such as Swiss needle cast and *Phellinus weirii* root rot because of mixed-species components in the stands.

The desired condition of the Riparian Reserves would be to provide specific desired vegetation characteristics. Desired vegetation characteristics required for proper Riparian Reserve function include large trees, abundant and well distributed mature and understory conifers, diverse shrub species, and large woody debris in stream channels and on floodplains. The Riparian Reserve stands in the proposed project area currently lack many of these characteristics. Both the Northwest Forest Plan and the Salem District RMP support thinning young to mid-age Riparian Reserve stands to help meet management objectives.

Maintaining low road and logging costs is an important objective of the Bureau. However, having access to our lands and being able to treat these stands silviculturally if needed is important to the development of the stands. The desired future condition is one where we are able to treat current and future stands for silviculture objectives, other resources are not greatly affected and road and logging costs are reduced.

## 2.2 Alternatives

### 2.2.1 Alternative Development

Pursuant to Section 102(2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall "…study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." No unresolved conflicts concerning alternative uses of available resources (section 102(2) (E) of NEPA were identified. Two action alternatives (in addition to the proposed action and the no action) were identified for Project 1, which meet the purpose and need of the project, but may have meaningful differences in environmental effects.

On April 29 2005, a Scoping Letter along with a copy of the 16-page Hoag Pass Scoping Report and copies of three Project Maps (Project Record Document 16) were sent to 49 individuals, organizations and agencies (Project Record Document 17). As a result of this scoping effort, three letters providing comments were received (Project Record Documents 22, 23, 32) and there was one request for a site visit to the project area. As a result of this site visit request, Tony Stein, Coastal Land Use Coordinator with Oregon Parks and

Recreation Department visited with Tillamook RA staff in the project area on July 7, 2005. For BLM responses to public comments see Appendix 1.

Alternative 1 - Proposed Action - The Proposed Action includes (re)placing[1] the three culverts on Road 3-7-36.6 and leaving them in place for future use. Upon completion of the project drivable waterbars would be installed. A heavy gate would be installed to limit access and allow for maintenance.

Alternative 2 – The No Action Alternative.

Alternative 3 – All project design features are identical to Alternative 1 except this alternative includes (re)placing the three culverts on BLM road 3-7-36.6, utilizing the road for the thinning operation and then removing the culverts after the timber sale has been completed.

Alternative 4 – All project design features are identical to Alternative 1 except this alternative includes not (re)placing the three culverts on BLM road 3-7-36.6 and opening the road but yarding the cut trees from all the stands along that road with a helicopter. Approximately 45 acres are yarded with a helicopter under this alternative which under the other action alternatives are yarded with more conventional logging systems.

**Photo 1** – Typical 35-40 year old stand that would be treated by density management. (Currently 230 trees/acre)

### 2.2.2 Alternative 1: The Proposed Action (install and leave culverts)

In order to meet the Purpose and Need stated above, the BLM proposes to perform density management thinning, using the commercial harvest of timber on approximately 862 acres, located in eleven different sections within the Nestucca watershed. The proposed action is anticipated to be implemented (sold) in 2007 and 2008 as three timber sale projects. A combination of ground-based, cable and helicopter yarding systems would be used. Approximately 22% of the area would be harvested using a ground system, 55% would be harvested with a cable system, and 23% would be harvested by helicopter. See Figure 2 for a map of the proposed action (Alternative 1).

**Photo 2** – Expected variable-spaced thinning in a 50-60 year old stand immediately after harvest. (Retained ≈ 50% of the trees/acre)

Treatment Area

The proposed action would treat approximately 862 acres of mixed Douglas-fir and western hemlock stands; approximately 537 acres are 30 to 80 years-old and 384 acres are between 80 and 97 years-old. The stands are proposed to be thinned in a variable-spaced manner that generally removes the smaller trees from the stand. Depending on stand age and condition this may result in removing 15 to 60% (average 38%) of the basal area[2], which translates to approximately 15-80% (average 53%) of the trees per acre.

See Photos 1 and 2 for examples of expected before and after photos of the younger treatment areas; Photo 1 is a typical 35-40 year old stand that would be harvested, while Photo 2 is a 50 to 60 year old stand where about

[1] (re)placing: The previous culverts on road 3-7-36.6 were removed in 2001 because they were undersized, in poor condition and at risk of failure; failure potentially would have resulted in unacceptable resource damage. Currently there are no culverts in this portion of the road.

[2] Basel area: The sum of the cross sectional areas of all stems in a stand measured at breast height, measured in $ft^2$.

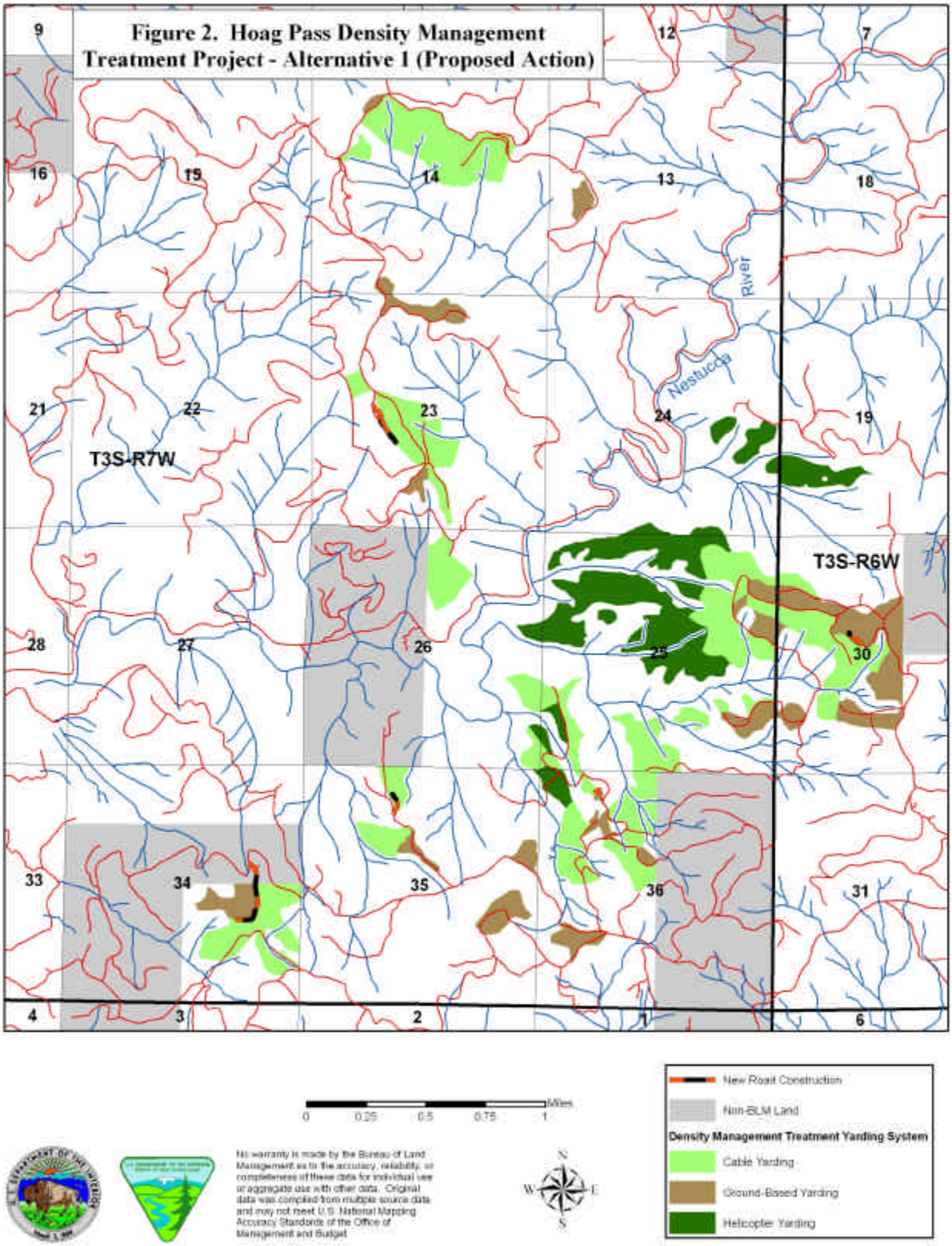


Figure 2. Hoag Pass Density Management Treatment Project - Alternative 1 (Proposed Action)
9
12
7
16
15
14
13
18
River
Nestucca
21
22
23
24
19
T3S-R7W
T3S-R6W
28
27
26
25
30
33
34
35
36
31
4
3
2
1
6
Miles
0
0.25
0.5
0.75
1
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data was compiled from multiple source data and may not meet U.S. National Mapping Accuracy Standards of the Office of Management and Budget
N
W
E
S
New Road Construction
Non-BLM Land
Density Management Treatment Yarding System
Cable Yarding
Ground-Based Yarding
Helicopter Yarding

This page intentionally left blank

half of the trees per acre were retained. Photos 3 and 4 are examples of typical older stands that would be treated and would look post treatment respectively. Variable density thinning would result in a range of density conditions, including small (less than .5 acres) unthinned clumps and open gaps. In addition unthinned clumps and relatively open gaps ranging between 0.5 and 1 acre in size would be created within some of the treated stands; a portion of the gaps may be planted with appropriate species. Upon completion, the canopy closure in stands greater than 80-years-old and/or stands that currently have trees greater than or equal to 18 inches average DBH would be expected to average at least 60%; stands less than approximately 80-years-old would have a canopy closure greater than 40%. Thinning would occur in the Douglas-fir component of the stands because it is the most abundant species; other conifers and hardwoods would be retained to maintain and enhance the species mix of the stands.

**Photo 3** – Typical 80 year old stand that would be treated by density management. (Currently 91 trees/ acre)

**Photo 4** – An 80 year old stand that was treated with density management about 8 years ago (Retained ≈ 70 trees/acre)

In general, the larger-diameter conifers with relatively high live crown ratios and healthy appearing crowns would be retained, regardless of spacing. As identified in the LSRA, trees greater than or equal to the diameter cutting limits shall be reserved from harvest; any of these larger trees incidentally felted to facilitate harvest would be left on site as course woody debris. Existing western hemlock and western redcedar in the understory would be retained where possible.

Riparian Reserves

Approximately 26% of the proposed density management (about 226 acres) would occur within the Riparian Reserve land use allocation. These Riparian Reserve treatments would occur outside "no-harvest" buffers that would be placed along streams; in general there would be a 50' no-harvest buffer along non-fish-bearing streams and 100' no-harvest buffers along fish-bearing streams. Restrictions would apply on ground-based logging equipment within Riparian Reserves which would effectively result in some of the no-harvest buffers adjacent to ground-based yarding units being increased in width to up to approximately 150 feet.

The Riparian Reserves encompass one site potential tree on most streams and two site potential trees on the Nestucca River. The site potential tree heights range from 180 feet to 240 feet in the project area, with an average of 212 feet. No treatment would occur within the Riparian Reserve for the Nestucca River (two site potential trees).

In general, the proposed treatments would be similar in both the Riparian Reserve and in the upland areas; exceptions include the design features that no gaps would be created within Riparian Reserves, and specific treatments resulting in higher tree retention levels specifically designed for a portion of the Riparian Reserves would be implemented on approximately 21 acres within four units.

### 2.2.2.1 *Connected Actions*

Connected Actions are any action that would not be implemented except that they are associated with the proposed action; they do not contribute directly to the purpose and need, but help with the proper implementation of the proposed action. For this project we have several connected actions, some of which have already been analyzed under previous NEPA documents. These have been separated from the connected actions that are being analyzed in this EA.

Road Work

Many of the roads in the project area have been analyzed under different NEPA documents, while others have not been previously analyzed. Table 1, is a summary of all road actions that would be implemented under the proposed action. Below, the road work is separated into two categories, those that have had NEPA analysis already completed and those that are being analyzed with this project.

**Table 1 - Road Construction and Renovation**. Estimated temporary road construction, reconstruction and decommissioning

| | New Construction | Renovation / Reconstruction |
|---|---|---|
| Natural Surface | 0.83 miles | 1.2 miles |
| Potentially New Rocked or Wood Chipped Surface | 0.55 miles | n/a |
| Rocked Surface Existing Roads | n/a | 10.7 miles |
| Decommissioned | 1.1 miles | 4.2 miles |
| *Approximate total road work for the project » 18.6 miles* | | |
| *Approximate net decrease in road length after decommissioning » 3.9 miles* | | |

Previously Analyzed Connected Actions

*Planting Maintenance*

After harvest seedlings may be planted in patch cuts, on decommissioned roads, landings, corridors, skid trails and other areas as appropriate if natural regeneration does not appear adequate to meet objectives for structural and species diversity. Measures to control competing vegetation or animal damage may be necessary to ensure seedling survival and growth. These measures may include scalping, manual brushing, and/or installation of mulch mats and tree tubes, and mountain beaver trapping. These projects have been analyzed under the Tillamook Resource Area CE (Categorical Exclusion) Young Stand Management (OR-086-00-09 CX).

*Road Work*

Approximately 9.1 miles of road previously identified and analyzed would need to be renovated and/or reconstructed to accomplish the proposed density management treatments. The 3-6-14.2 road would be analyzed under a routine Road Maintenance DNA (Determination of NEPA Adequacy), the rest were analyzed under the Coastal Road Stabilization and Watershed Restoration and Storm-Damage Road Repair Projects Environmental Assessment (EA# OR-086-00-04). After use these roads would be left in a condition consistent with the decisions of these NEPA documents.

Previously Unanalyzed Connected Actions

*Road Work*

There are about 2.8 miles of other roads that would be renovated and/or reconstructed that have not been previously analyzed, and have been analyzed in this Environmental Assessment. Of these 2.8 miles of road, about 1.7 miles are roads that are owned by the State of Oregon; the rest of the renovation/reconstruction is a short 220 ft spur road and the 3-7-36.6 road. The past roadwork conducted on the 3-7-36.6 road was analyzed under the Environmental Assessment Coastal Road Stabilization and Watershed Restoration and Storm-Damage Road Repair Projects (EA# OR-086-00-04); the current condition of this road is consistent with that decision. However, the proposed action is to reinstall the culverts to reduce logging costs and then leave the culverts in for future use, with a locked gate to block the road.

There would also be 1.4 miles of new road construction associated with implementation of the Hoag Pass Density Management Project. All of the newly constructed roads, (except for 0.3 miles) and landings would be decommissioned at project completion. See Table 2 for a summary of new road construction and the estimated acres accessed by each newly constructed road segment.

**Table 2 - New Road Construction: Estimated Acres Accessed by Each Newly Constructed Road Segment.**

| Spur Number | Approximate Length (feet) | Approximate Acres Accessed |
|---|---|---|
| P23-1 | 880 | 29 acres |
| P30-1 | 420 | 10 acres |
| P34-1 | 1730 | 57 acres |
| P35-1 | 530 | 10 acres |
| P35-2 | 900 | 17 acres |
| P35-3 | 1150 | 14 acres |
| P35-4 | 1500 | 80 acres |
| P36-1 | 200 | 8 acres |
| TOTAL | 7310 | 225 acres |

*Slash Disposal*
Post-harvest fuels hazard surveys would be conducted and site-specific treatments would be recommended. A variety of fuels prescriptions may be employed including lopping and scattering of slash, pullback of slash, hand piling and burning, swamper burning, landing piling and burning, or selling the material as firewood. These treatments may occur along roads, landings, property lines, within *Phellinus weirii* pockets, or other areas within the harvest units such as patch cuts or variable density thinning areas where fuel loadings are determined to be hazardous, or underplanting of trees is recommended.

### *2.2.2.2 Project Design Features*

The following is a summary of the design features that reduce the risk of effects to the affected elements of the environment. The proposed action(s) would be implemented consistent with the Best Management Practices (BMPs) contained in Appendix C of the RMP.

The design features are organized below by benefiting resource.

Desirable Stand Features, Diversity, and Protection

- Remove Douglas-fir trees in a variable-spaced manner using a diameter cut limit, with the following exceptions: retain trees that have significant defect, cavities, or dead or broken tops. Retain full-crowned smaller Douglas-fir, plus trees (trees selected for genetic traits) and their reference trees, and bearing trees. Retain Douglas-fir trees greater than or equal to the diameter cutting limits, hardwoods, western hemlock, noble fir, and western redcedar with the following exceptions: Remove red alder and unstable trees within the road prism (from the top of the cut bank to the lower shoulder) of traveled roads. (See Project Record document 44 for the complete prescription).
- Create patch cuts from .5 to 1.0 acre in size, totaling approximately 18 acres, in 11 units. Create unthinned leave islands from .5 to 1.0 acre in size, totaling approximately 14 acres in 8 units (that also

contain patch cuts). Within patch cuts, trees greater than the LSRA upper diameter cut limit may be cut and left as down wood, but 8-12 of the largest trees per acre would be left uncut. Standing red alder may be cut in these areas if beneficial to meeting conifer regeneration needs and to help protect planted seedlings from deer and elk browse. Leave islands would be located to protect concentrations of snags and logs, to increase coarse woody debris recruitment needs along stream influence zones, and where features or stand structure would benefit from higher tree density (e.g. slopes over 70%).

- Where cable yarding corridors converge near the landings, open areas within a 100-foot radius downhill of the landings would be planted with shade-tolerant conifer seedlings such as western redcedar, or western hemlock.
- Log lengths would be limited to 40 feet plus trim to reduce the potential for excessive residual stand damage. If determined necessary by the Authorized Officer, log lengths would be reduced on specific corridors to achieve full-suspension over water courses.

*Seasonal Restrictions*

- Felling and yarding operations would be restricted during the peak bark-slip period (generally May 1 to July 15) if excessive leave tree damage occurs. Western hemlock and true firs are particularly prone to damage. This restriction is less likely to be necessary in helicopter yarding areas.

*Coarse Woody Debris (Snags and Down Wood)*

- Retain green trees that have significant defect such as cavities, or dead, forked or broken tops.
- Conifers greater than the diameter cutting limits would possibly be cut to create skyline corridors, skid roads, landing areas, or haul roads. In general, trees cut that are greater than or equal to 16" DBH in stands less than age 40, and 20" DBH in stands over age 40, would remain on site for coarse wood enhancement; it is anticipated that a small portion of these felled trees would be removed in order to avoid the creation of operational problems and/or safety hazards.
- If reserve trees must be topped for operational purposes (e.g. lift or tail trees) they would be maintained on site to augment snag and downed woody debris habitat if possible.
- CWD creation would primarily be focused on stands that are currently considered to be suitable habitat for the northern spotted owl; these stands are greater than 80-years-old or have a quadratic mean DBH greater than 18 inches. Depending upon the stand's age, condition and location as well and the condition and amount of existing CWD relative to target levels, up to approximately 8 Douglas firs per acre would be converted to a snag or snag-topped tree or felled to enhance CWD.
- Where applicable, created snags or felled trees would generally not be located within approximately 150 feet of a drivable road, a property line boundary where BLM land abuts non-federal ownership, any designated OHV trail and/or the Jane Creek hiking trail. This feature is designed to help reduce the potential for the creation of a safety hazard and/or the likelihood that the material would be stolen or sold as firewood.
- Existing coarse woody debris would be retained to the extent possible, and snags cut or are knocked over during logging would remain on site.
- Existing snags (greater than 18"dbh and 20' in height, or snags being actively used by wildlife) would be surrounded with two or more leave trees to protect them from logging damage.
- CWD would result from trees broken during timber falling, from windthrow after harvest, and from density mortality continuing in clumps of relatively dense conifers remaining after variable density thinning. In addition, the following is prescribed to meet target CWD levels:
    - Strategy #1 (high level): In stands that meet 'suitable' northern spotted owl habitat (>80 years or >18" quadratic mean diameter), at least one snag per acre would be created to increase the level of standing 'hard' (less decayed) CWD. To meet the high target level, the necessary quantity of average or larger-sized leave trees (generally from the 20-28" diameter classes) would be girdled, cut, or topped, up to a limit of about 8 trees per acre, to reduce the risk of Douglas-fir bark beetle outbreak.

- Strategy #2 (moderate level): In mid-seral stands, to meet the moderate target level, the necessary quantity of average or larger-sized leave trees (generally from the 16-28" diameter classes) would be girdled, cut, or topped, up to a limit of about 8 trees per acre, to reduce the risk of Douglas-fir bark beetle outbreak.
- Strategy #3 (minimum level): In early-seral stands, no CWD would be created by girdling, topping or cutting trees in this entry, because tree diameters are generally small. Additional coarse wood (primarily snags) could be added at future stand entries. Waiting for the trees to grow to larger size in response to the density management thinning would result in substantially larger, higher quality, longer lasting snags.

Water, Fisheries and Soil Resources

- Timber harvest and associated road actions would utilize the BMPs required by the Federal Clean Water Act (as amended by the Water Quality Act of 1987).
- A minimum "no-harvest" buffer would be placed along both sides of streams and small wetlands less than one acre in size; the minimum size of this buffer would be 50 feet for non-fish bearing streams and 100 feet for fish bearing streams or to the outer edges of any unstable areas.
- To protect water quality, trees would be felled away from all no-harvest buffers within the harvest area. If a cut tree falls into a "no-harvest" buffer, the portion of the tree within the buffer would remain in place.
- Trees would be retained at higher density in the lower 100' of Riparian Reserve (above the 50' no-cut stream buffer) to aid in long-term downed woody debris recruitment in selected units.
- A sediment control plan would be created and implemented for the Davidson rock pit helicopter landing, so that sediment from that site does not enter the Nestucca River. (Sediment Control Plan, BLM, 2006)

*Seasonal Restrictions (See Table 3 for a summary of seasonal restrictions)*

- *Ground Based Equipment:* The use of ground-based equipment would be restricted to periods of low soil moisture; generally June 15 through October 15. This season could be adjusted if unseasonable conditions occur (e.g., an extended dry or wet season). Operations would be suspended during periods of heavy precipitation if resource damage would occur.
- *Cable Yarding:* In general, the season of operation for cable yarding would be dependant upon the haul routes. It may be extended beyond the dry season in those areas where yarding would take place directly to a road identified for extended season of haul.
- *Helicopter Yarding:* In general, the season of operation for helicopter logging would be extended beyond the dry season, depending on haul routes.
- *Road Work:* All road decommissioning, construction and reconstruction would occur during the dry season (generally June 1 through October 15). All work required in live streams (culvert replacement) would be limited to the ODFW instream work window (July 1 to September 15).
- *Haul:* There are several haul routes utilized by the Density Management Project. Most of them would only be used for dry season hauling. Specified road systems may be available for extended season hauling (Figures 3 and 4). Depending on weather and road conditions hauling on these road systems would be allowed for most of the calendar year, excluding the wettest months (generally Dec 1 – Feb 15).
- All hauling and road maintenance work done during the "wet season" (generally outside of the period between June 1 and October 15) would be subject to the following stipulations to minimize negative impacts to water quality and fish habitat:
  - Hauling and maintenance activities would be suspended when conditions exist that may cause the generation of excessive sediment, such as intense or prolonged rainfall; or when the road surface is deteriorating due to freeze-thaw cycles or from excessive use.

**Table 3 – Seasonal Restrictions incorporated into the Hoag Pass Density Management Project**

***Restricted Times are Shaded**

| Activity | Acres | JAN | | FEB | | MAR | | APR | | MAY | | JUN | | JUL | | AUG | | SEP | | OCT | | NOV | | DEC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 15 | 1 | 15 | 1 | 15 | 1 | 15 | 1 | 15 | 1 | 15 | 1 | 15 | 1 | 15 | 1 | 15 | 1 | 15 | 1 | 15 | 1 | 15 |
| Falling and Bucking** | 862 | | | | | | | | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | |
| Ground-based Yarding | 192 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | ■ | ■ | ■ | ■ | ■ |
| Cable Yarding | 405 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | ■ | ■ | ■ | ■ | ■ |
| Helicopter Yarding | 209 | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | ■ | ■ |
| Extended Cable Yarding *** | 56 | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | ■ | ■ |
| Road Decommissioning | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | ■ | ■ | ■ | ■ | ■ |
| In-stream work | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Extended season haul | | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | ■ | ■ |
| Dry season haul | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | ■ | ■ | ■ | ■ | ■ |

The primary extended season road systems generally include paved and relatively newly rocked roads:

3-6-13 - Nestucca Access Road

3-6-14.2 - Old Bald Mountain Road

3-7-28 - Upper Hoag Pass Road

The primary road systems that are more restrictive in season of use include roads that are natural surface roads or roads surfaced with relatively older rock and cost of upgrading to a higher standard is prohibitive:

3-7-27.1 - Dover Peak Tie Road

3-7-24 - Fan Creek Road

3-7-28 - Lower Hoag Pass Road

* All dates except the In-stream work period are dependent on actual weather conditions

** Bark slip restrictions may be conditionally waived

*** Cable units in which the logs go to an extended season road

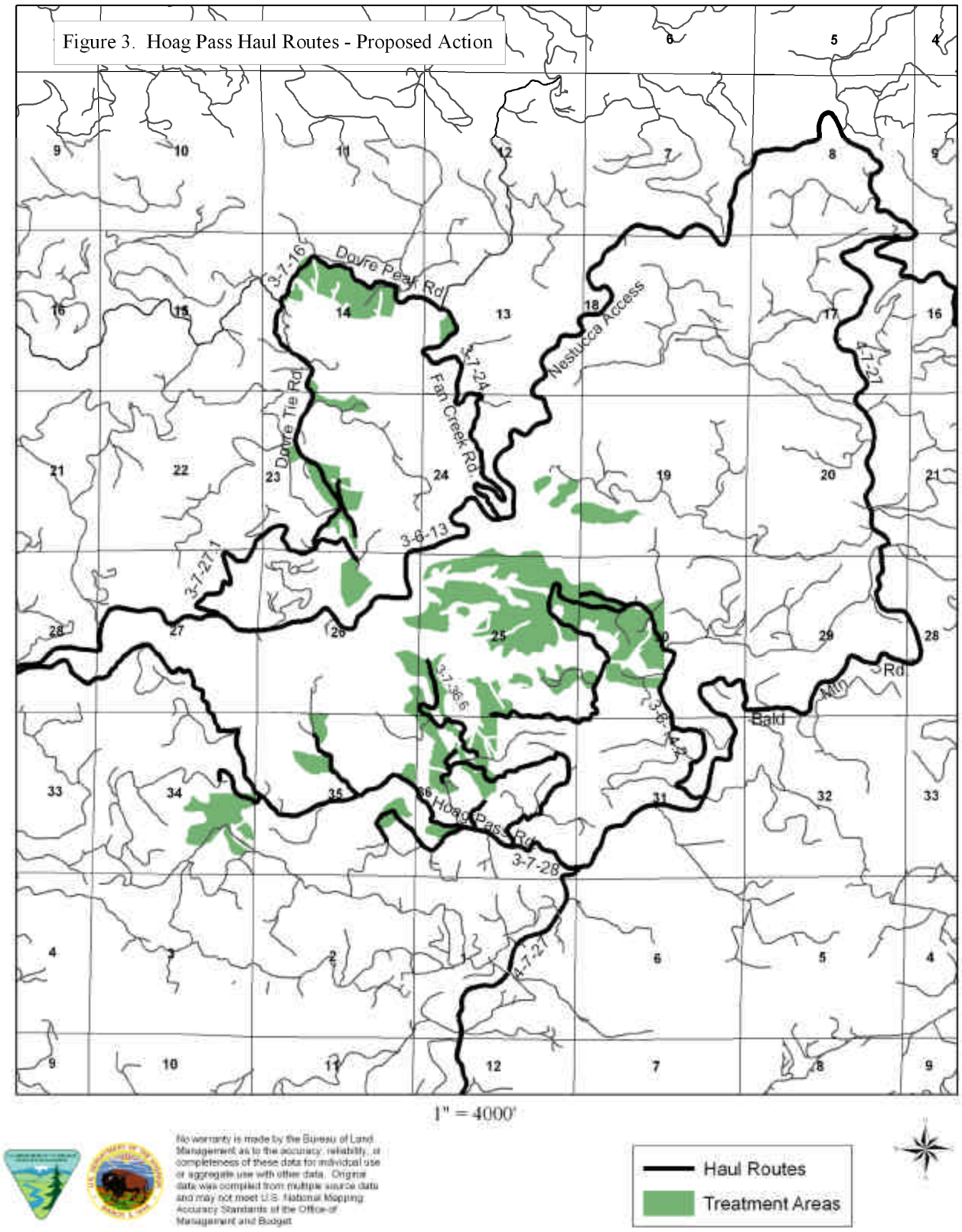


Figure 3. Hoag Pass Haul Routes - Proposed Action
Doyre Peak Rd
3-7-16
Doyre Tie Rd
Fan Creek Rd
3-7-24
Nestucca Access
4-7-27
3-6-13
3-7-27.1
3-7-36.6
3-6-14.2
Bald Mtn Rd
Hoag Pass Rd
3-7-28
4-7-27
1" = 4000'
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data was compiled from multiple source data and may not meet U.S. National Mapping Accuracy Standards of the Office of Management and Budget
Haul Routes
Treatment Areas

This page intentionally left blank

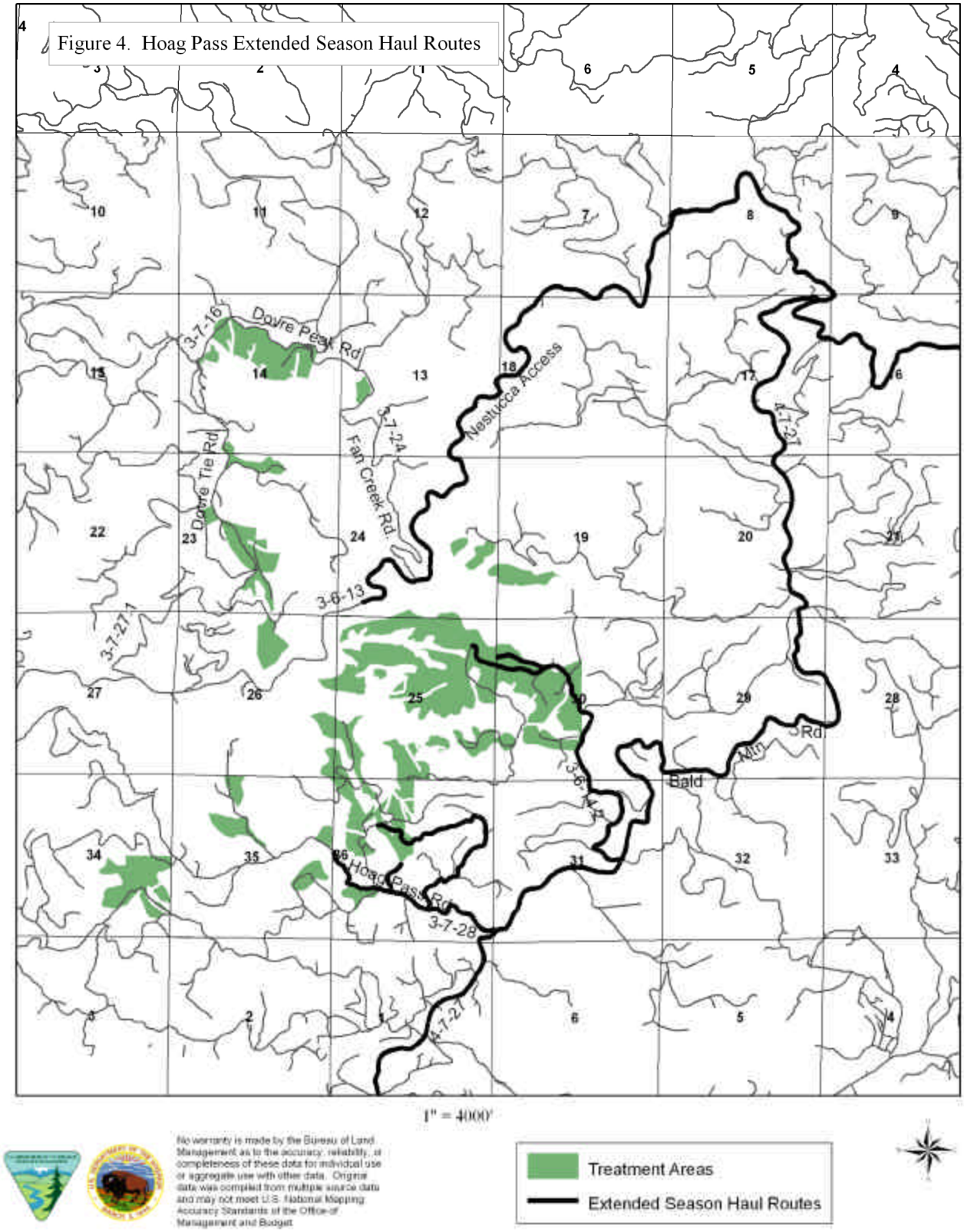


Figure 4. Hoag Pass Extended Season Haul Routes
Dovre Peak Rd
3-7-16
Dovre Tie Rd
Fan Creek Rd.
3-7-24
Nestucca Access
3-6-13
3-7-27
Bald
Hoag Pass Rd
3-7-28
1" = 4000'
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data was compiled from multiple source data and may not meet U.S. National Mapping Accuracy Standards of the Office of Management and Budget
Treatment Areas
Extended Season Haul Routes

This page intentionally left blank

- Spot rocking and/or sediment traps would be employed as needed to reduce the potential sediment inputs to area streams and to protect the road surface. Sediment traps would be inspected weekly during the wet season and trapped sediments would be removed once the trap has filled to ¾ capacity.
- To the extent feasible, road maintenance activities that could result in sediment leaving the roadway would be scheduled during periods of dry weather (as early as May 1 through approximately October 15).

*Yarding*

- Ground: Designated skid trails would be used in order to limit the extent of skid trails and landings to less than 10% of the unit. Skid trail and landing cutting limits would be kept to the narrowest width and size necessary to reasonably harvest the unit (for analysis purposes, assume a 12-foot-wide impact area for skid trails and a 50-foot-diameter impact area for landings). Use existing skid trails and landings to the extent possible.
- The purchaser may elect to use mechanized, cut-to-length systems provided that the following measures are met:
  - Harvesters, feller-bunchers, and or log processors must be boom mounted with a minimum operating radius of 20 feet. The equipment must have a ground pressure rating of 8 psi (pounds per square inch) or less. Log harvesting equipment trails would be spaced 40 to 50 feet apart and be no more than 15 feet in width. No more than two passes over the same ground would be permitted.
  - Forwarding or skidding equipment would be restricted to designated trails approved by the Authorized Officer prior to felling and yarding operations. Trails would average 12 feet or less in width and would be located, on average, 100 feet apart.
  - The harvester would be required to place slash in front of the machine tracks or tires in order to reduce compaction. The forwarder or skidder would operate on a nearly continuous layer of slash, minimum of 6 inches thick.
- Cable: At least one-end suspension on all logs is required in cable logging areas, and where feasible in ground-based logging areas.
- On areas that would be cable yarded during extended season or wet season with slopes greater than 65 percent, cable yarding would be full suspension or one-end suspension using a standing skyline with lateral yarding capacity.
- Skyline corridors on spans that are less than 1200 feet would generally be 12 feet in width and located 150 feet apart at one end. Skyline corridors on spans that are greater than 1200 feet would generally be 20 feet in width and located 150 feet apart at one end.
- Riparian Reserves: Riparian “no-harvest” buffers may have yarding corridors cut through them if necessary; however any trees cut in the “no-harvest” buffers would be left on site to augment CWD.
- During the dry season (generally June 1 - October 15), logs yarded over streams would be fully suspended within 25 feet of designated stream channels; if yarding occurs outside of the dry season, logs would be fully suspended within 50 feet of designated stream channels.
- Ground-based equipment would not be permitted to enter Riparian Reserves except where they are able to operate from existing roads.
- Yarding would be restricted in Riparian Reserves to corridors that are perpendicular to streams (or as close as possible to 90 degrees).

*Road, Skid Trail and Landing Construction, Reconstruction and Decommissioning*

- New roads and skid trails: New road and skid trails would be located outside of Riparian Reserves.

Except for small areas of spot-rocking, rock or wood chips would not be placed on about 75% of new temporary roads.

- Landings*:* The number of landings and their size would be kept to the minimum required to reasonably harvest the units. Each helicopter landing would be approximately ¼ to ½ acre in size and at least a part of it would be rocked if logging operations occur during wet weather. Landings would be located by the purchaser and approved by the BLM.
- Renovated Roads: Replace the three culverts on Road 3-7-36.6 and leave them in place, installing a gate across the road.
- Decommissioned roads: Approximately 92% of newly constructed road and some renovated and/or reconstructed roads would be decommissioned. Decommissioning would consist of decompacting, water barring, seeding or planting with native species, and restricting OHV use. Restricting OHV use may include the strategic placement of boulders or root wads, or other types of earthen barriers.
- Primary skid trails: As determined necessary by the silviculturist and soil scientist, some of the primary skid trails would be decompacted by subsoiling.
- Regeneration: Subsoiled roads and landings would be planted with red alder seedlings (1-0 bare root or one-year-old containerized planting stock) to supplement natural alder regeneration. Helicopter landings would be planted after use with red alder and conifer seedlings, particularly within the Nestucca corridor.
- If the Davidson rock pit, located along the Nestucca Access Road is requested and approved for use as a helicopter landing, the waste asphalt material currently located within and/or near the Davidson rock pit would be disposed of in an appropriate manner.

Special Status Species

- No potentially suitable murrelet or northern spotted owl nest trees would be felled and where possible, no openings would be created within one tree length surrounding a potential murrelet nest tree.
- Any newly discovered marbled murrelet sites (as per the Pacific Seabird Group Marbled Murrelet Technical Committee protocol) would be protected by a 0.5 mile radius buffer on all contiguous existing and recruitment federal habitat.

Invasive / Non-Native Plants

- Prior to entering the sale area each work season, or before returning to the watershed after leaving it, any heavy machinery (with the exception of log trucks and pick-up trucks used for daily personnel travel) would have all dirt and adhering vegetation removed by power-washing.

Cultural Resources

- Survey techniques for cultural resources are based on those described in the *Protocol for Managing Cultural Resource on Lands Administered by the Bureau of Land Management in Oregon.* A post-project survey would be conducted according to standards based on slope defined in the Protocol appendix. Ground disturbing work would be suspended if cultural material is discovered during project work until an archaeologist can assess the significance of the discovery.
- The historic homestead sites in the area would be posted outside of the unit boundaries with a minimum of 50 foot buffers.

Recreation and Access

- Portions of the proposed action areas are contained within the area of the Upper Nestucca OHV (Off-Highway Vehicle) Trail System. Approximately ten OHV trail segments are located within proposed density management treatment units. All trails would be cleared of logging debris post-harvest. These trail segments as well as additional road segments would be temporarily closed to OHV use as the project is implemented (also see design features to reduce Fire Risk).

- The Jane Creek hiking trail passes through a portion of the density management treatment units; design features to protect the integrity of this trail include a buffer around the trail (buffer width would vary as needed), not allowing yarding across the trail, and clearing all logging debris from the trail during post-harvest operations.

- No timber harvest would be conducted within the Riparian Reserves of the mainstem Nestucca River based on the river's eligibility for inclusion in the National Wild and Scenic Rivers System.
- Yarding: As per OSHA regulations, traffic would be controlled where helicopters transport logs over roadways or cable skylines cross roads– possibly the Nestucca Access Road or Bald Mountain Road. This could result in traffic delays of up to two hours.
- A Traffic Safety Plan would be developed to assure public safety on roads impacted by implementation of the timber harvest operations.
- The Fan Creek campground may be temporarily closed for up to approximately two weeks if the purchaser requests approval of a helicopter flight plan that includes flights over the campground.
- The Elk Flat stockpile site receives use as an OHV staging area; if requested as a helicopter landing site it may be closed to public use during logging operations.
- Where possible the trees next to the Davidson rock pit helicopter landing would be pruned or topped instead of felled to maintain a visual buffer.
- If needed large planting stock would be planted in or near the rock pit helicopter landing after use.
- A Rehabilitation Plan for the Davidson rock pit helicopter landing would be created and a copy would be sent to the Oregon Parks and Recreation Department for comments.

Fire Risk

- Lopping and scattering of fuels may be incorporated in areas where fuel loading is relatively heavy but not heavy enough to warrant hand piling or burning.
- Pullback of fuels may be incorporated in areas where fuel loading is relatively light (especially along roads) and not heavy enough to warrant hand piling or burning. All slash would be pulled back at least 10 feet from designated OHV trails and from the Jane Creek hiking trail.
- Burning would be conducted under good atmospheric mixing conditions to lessen the impact on air quality in designated areas.
- Landing piles should be located as far as possible from green trees to minimize damage.
- Hand piles should be located at least 10 feet from green trees, where possible, to minimize damage.
- Hand piles and landing piles would be covered to facilitate the consumption of fuels during the high moisture fall/winter burning periods.
- To further mitigate fire risk, specified logging roads and OHV trails in the project area would be posted 'closed' to all vehicle use when an Industrial Fire Precaution Level of II or greater is reached during the first year following harvest activities, while fuels are in the "red needle" stage. These designated areas should be monitored for the need of additional closures during subsequent years during periods of high fire danger.

### 2.2.3 Alternative 2: No Action Alternative

The BLM would not implement the commercial density management thinning project at this time. The plant and animal communities would continue to be dependant upon the current stand development trajectories and ecological processes.

### 2.2.4 Alternative 3: Install and Pull Culverts of Road 3-7-36.6

Alternative 3 is the same as Alternative 1 the proposed action except that the culverts being replaced in the 3-7-36.6 road would be removed at the end of the treatment and left in a condition similar to its current status. All of the treatments and design features are the same as Alternative 1.

### 2.2.5 Alternative 4: Leave Road 3-7-36.6 as is and use Helicopter Logging

Alternative 4 is the same as Alternative 1 except that, the 3-7-36.6 road would be left in its current condition with no culvert replacement; any units that would have been accessed by that road under Alternatives 1 and 3 would become helicopter units see Figure 5. Approximately 45 acres are yarded with a helicopter under this

alternative which under the other action alternatives are yarded with more conventional logging systems. All other treatments and design features for this alternative are the same as Alternative 1.

### 2.2.6 Economic Analysis of the Alternatives

An economic analysis was conducted that takes into account some of the differing costs associated with actions described for road 3-7-36.6 in Alternatives 1 - 4. All other costs associated with the alternatives are identical and therefore not depicted on this table. The details and assumptions that were used in this analysis can be found in the project record (Project Record Documents 48 and 49). The Table 4 below shows the differences between the estimated road and logging costs by alternative.

**Table 4 - Economic Comparison of Alternatives**

| | Alternative 1 | Alternative 2 (No Action) | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| Estimated Road costs for road 3-7-36.6 | $23,608 | No costs | $32,768 | No costs |
| Estimated logging costs | $394,252 | No costs | $394,252 | $546,006 |
| Total costs (road costs + logging costs) | $417,860 | No costs | $427,020 | $546,006 |

## 2.3 Affected Environment, Environmental Effects and Cumulative Effects

Any elements that were identified in the Environmental Elements Table (Appendix 2) as being affected are described below. Their Affected Environment, Environmental Effects, and Cumulative Effects are described in detail in this section.

### 2.3.1 Forest Vegetation (Associated with Late-Successional Reserves and Riparian Reserves)

Affected Environment

*Vegetation*
The Hoag Pass project area is in the upper Nestucca River drainage in the northern Oregon Coast Range. The area is densely forested and surrounded by public and private forestlands. The recommended density management projects were included in the analysis of the 5,000 acre planning area documented in the 2004 Hoag Pass Activity Planning Unit Report (Hoag Pass APU).

The proposed treatment area contains approximately 862 acres of dense forest stands within 15 sections of relatively contiguous (not 'checkerboard') BLM-managed federal lands in the Northern Coast Range Adaptive Management Area, overlain by the Late Successional Reserve Land Use Allocation. Approximately 26% of the treatment areas (226 acres) are also located within the Riparian Reserve LUA.

Elevation within the project areas ranges from about 1,150 feet on the Nestucca River in the west, to 2,850 feet on the upper ridges. Slopes range from flat (0%) to 80% with various aspects. The average site index (King, 50-year) is 125 (site class 2).

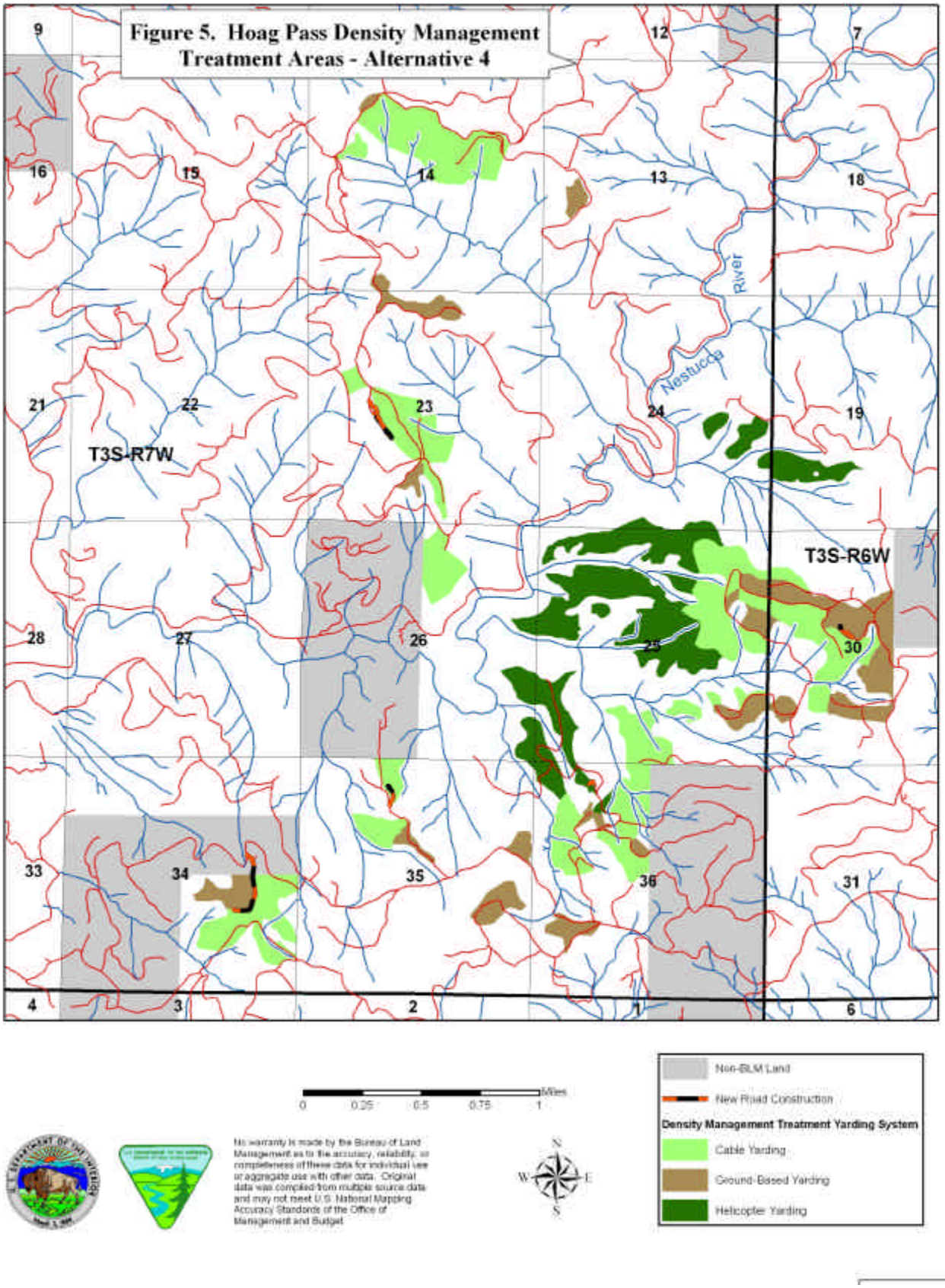


Figure 5. Hoag Pass Density Management Treatment Areas - Alternative 4
9
12
7
16
15
14
13
18
River
Nestucca
21
22
23
24
19
T3S-R7W
T3S-R6W
28
27
26
25
30
33
34
35
36
31
4
3
2
1
6
Miles
0
0.25
0.5
0.75
1
Non-BLM Land
New Road Construction
Density Management Treatment Yarding System
Cable Yarding
Ground-Based Yarding
Helicopter Yarding
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data was compiled from multiple source data and may not meet U.S. National Mapping Accuracy Standards of the Office of Management and Budget
N
W
E
S

This page intentionally left blank

Abundant understory vegetation species include vine maple, swordfern, dwarf Oregon grape, salal, red huckleberry, and bracken fern. The most common plant association in the area is the western hemlock/vine maple-swordfern association, highly productive sites that can quickly become occupied by shrubs and red alder following disturbance (McCain and Diaz, 2002). Drier areas are in the western hemlock/dwarf Oregon-grape-salal association. These are moderately productive sites with somewhat thin soil and moderate shrub layers.

Important vegetation issues in the Nestucca River watershed include rarity of late-successional forest habitat, and the abundance of dense closed-canopy, even-aged Douglas-fir stands. Due to a history of catastrophic wildfires, the oldest conifer stands date from about 1890, comprising about 15% of the watershed. Conifer stands aged 80 to 109 years comprise about 19% of the area. Mid-seral conifer stands aged 35-79 years make up approximately 26% of the area, and early seral stands (10-35 years) comprise 26% of the area. Hardwood-dominated stands (14% of the area) occur along the Nestucca River, tributaries, moist basins, and disturbed areas. Younger conifer stands were either planted or seeded following clearcut harvest. Pre-commercial thinning occurred in most young stands originating since 1960. Over 1,000 acres of stands now older than 60 years had light commercial thinnings in the 1960's and the 1970's. Most stands are generally quite dense and uniform in structure and composition, and many have low levels of coarse woody debris.

The stands proposed for treatment are dominated by Douglas-fir, but a few contain a small western hemlock component (with the exception of Unit 36D, where it is abundant), noble fir, red alder, or cherry. Understory development is very limited - only six stands contain more than 20 seedlings or saplings per acre; they are of the same species listed above.

The stands proposed for treatment are aged 31 to 98 years old, with an average age of about 69 years. Their average crown ratio (the ratio of live crown to total tree height), a measure of tree vigor, is 0.37, ranging from 0.25 to 0.53. The average canopy closure (based on ocular estimates from stand exam data) is 74% (range: 53 to 80%). The overstory quadratic mean diameters (diameter of a tree of the stand's average basal area) for the units range from 10.2 to 29.3 inches.

The relative density index values (indices to the level of competition among the trees within a stand) range from 0.396 to 0.917. Below a relative density index of 0.25, trees are experiencing little inter-tree competition. Above relative density index of about 0.55, tree-to-tree competition is enough to cause mortality.

Height-to-diameter ratio, an index of tree stability, averages 86 for all stands, but ranges widely from 56 to 116. Trees with a height-to-diameter ratio of above about 80 are more susceptible to damage from wind and snow. As an overall weighted average among the proposed treatment units, there are 2,858 cubic feet per acre of total coarse wood. Approximately 45% of this total is from down wood, and 55% is from snags. The majority of the coarse wood is in the 'soft' (older) decay classes. There are no major threats to forest health in the area proposed for density management thinning, however *Phellinus weirii*, annosus root disease caused by *Heterobasidion annosum*, Swiss needle cast, and Douglas-fir beetle are all present at low or endemic levels.

Environmental Effects

#### *2.3.1.1 Alternative 1: Proposed Action*

Alternative 1 would reduce the existing dense coniferous canopy cover through variable density thinning on approximately 862 acres. The larger-sized trees would be retained by thinning from below using diameter cutting limits, but very vigorous smaller Douglas-fir and all shade-tolerant species would be retained. Patch openings and leave islands from .5 to 1.0 acre in size would be created in some units 60 years old or greater, totaling no more than 5% of unit area. Within patch openings, 8-12 trees would be retained. Large remnant trees, snags, and down wood, and overstory hardwoods would be retained. In stands deficient in coarse woody debris, containing suitable tree diameters, some trees would be felled, girdled or topped to increase CWD levels. Additionally, in all stands classified as suitable northern spotted owl habitat, one or more trees

per acre would be felled, girdled or topped for coarse woody debris. Coarse woody debris creation would be proportionally higher in Riparian Reserves than uplands to better meet in-stream wood recruitment needs.

Density management would be expected to increase overstory tree diameter growth, increase crown branch size, promote stand stability, and increase understory tree and ground vegetation development. Variable-spaced density management would give some trees more room to grow and others would be given less, increasing overstory canopy heterogeneity and resulting in an uneven pattern of understory development. By encouraging mixed-species stands and retention of Douglas-fir trees that demonstrate a relatively greater degree of tolerance to Swiss needle cast, the stands would be more resilient to the affects of this disease and *Phellinus weirii* root rot. Thinning primarily from the Douglas-fir component to increase the relative proportion of the other species would also increase the general diversity of the units. In the long term (>30 years) the larger-sized trees would result in higher quality down logs and snags as a portion of the trees eventually die or are converted to snags or down logs through planned management actions.

Predicted effects of treatment on stand growth are from stand growth projections from the ORGANON growth and yield computer simulation model (Hann et al. 2003). The height-to-diameter ratios are predicted to drop from the current average of 86 to an average of 73 immediately after treatment, and to remain below this average for at least 25 years after thinning. Average tree stability is immediately increased by removing tree with the highest ratios (lowest stability), but there would be a greater risk of windthrow in treated stands in the short-term (3-10 years) because more open canopy conditions would allow greater stress on individual trees. The greatest risk would be to stands on the lee side of southeast-to-northwest oriented ridges. Overall, the risk of windthrow is considered to be relatively low based on implementation of similar actions in the Coast Range.

The predicted increase in quadratic mean diameter as a result of density management thinning would result in an additional 5 inches of diameter growth in 25 years, an 18% increase from no treatment. A 5 inch diameter increase on a 20 inch tree represents a 56% increase in bole volume. Relative density would decrease from the current average of .681 to .382, greatly reducing tree-to-tree competition and increasing individual tree growth. However, by reducing competition, and removing the trees from below that are most likely to die from this competition, the rate of snag recruitment is reduced until levels of competition again increase. Offsetting this effect are the leave islands and the network of “no-harvest” riparian buffers that provide untreated areas where some suppression-related mortality would continue to occur.

Felling, girdling or topping trees to increase coarse woody debris would further reduce stand densities, increasing the effects listed above. It also has the potential to cause a short-term (2-3 years following the action) increase in Douglas-fir beetle activity. When three or more windthrown Douglas-fir trees (over 12” diameter) fall per acre, the numbers of beetles produced is sufficient to cause infestation and mortality of standing live Douglas-fir trees (Hostetler and Ross 1996). This information was used to establish an upper limit of coarse wood enhancement prescriptions for the Hoag Pass Project, but the limit was set at about 8 trees per acre, because local experience supports taking greater risk. In two project areas in and around the Nestucca watershed, observed Douglas-fir mortality from Douglas-fir beetle attack as a result of leaving Douglas-fir logs was much less than expected. Managing densities of Douglas-fir forests to maintain vigorous growth offer the best method of limiting damage by the DF beetle in the long term. Beetle killed trees would likely fall after 15-30 years contributing to additional down wood.

In Riparian Reserves, treatment effects under Alternative 1 are expected to contribute to development of large trees for future large woody debris recruitment, retain abundant shade, and maintain diverse shrub, hardwood and understory habitat for stream nutrient input. Retention of un-treated stream buffers and higher stand densities in selected Riparian Reserves, and proposed creation of coarse woody debris is expected to maintain a the rate of large woody debris recruitment similar to existing conditions, while greatly augmenting current levels.

Cumulative Effects

The cumulative effects of this action would be a result of habitat changes at the landscape scale, resulting from the cumulative changes to structure at the stand (approximately 25 acre) scale, resulting from past treatments, the 862 acres of proposed density management (Project 1), the effects of Project 2 and 3, and stand management activities in adjacent areas. On BLM lands, recent and planned density management within or near the Nestucca Watershed include Muletail, Rye Mountain, Willy's Elk, Phoenix, ReBear, Southern Flame, Baker Creek I, Baker Creek II, Southern Flame II, Ginger Snap, Cedar Sunset, Moon Creek, and likely Walker Creek (beginning 2010). In addition, variable spaced or standard pre-commercial thinning are ongoing in stands aged 25 years or less in the area. The BLM implemented snag creation projects within 1271 acres of mature conifer dominated stands located within the "Nestucca Block" LSR between May 1995 and January 2003. These projects have similar effects as those expected from the proposed Hoag Pass Projects. Projects 1 and 2 would increase Douglas-fir beetle habitat at a landscape scale in the short-term, but other projects would not contribute to cumulative effects from bark beetle activity unless they create fresh downed Douglas-fir trees nearby within the same 2-3 year period. In the longer term, Project 1 and 2 would increase coarse woody debris and shrub habitat components, and produce late successional habitat sooner and potentially over a greater area than would have occurred without treatment, affecting wildlife species at a landscape level. Increases in tree vigor and stand structural and species diversity could increase stand 'resiliency' to insects, disease, and weather disturbance at the stand and landscape level in the long term. These changes in habitat and stand resiliency combined with similar changes from past, current, and planned projects in the area are a potential cumulative effect to disease and insect occurrence and wildlife using habitat at the watershed to landscape scale.

Clearcut harvests or thinnings are planned or likely on State of Oregon and private lands in the Ginger and Cedar Creek drainages, to the east of Jane Creek area in Upper Nestucca subwatershed, and in the upper Bear Creek drainage. The cumulative effects of these actions in conjunction with the Hoag Pass Projects depend on the nature of the treatments. Thinning would tend to further create effects, including cumulative effects, similar to those described above, over a wider scale. Clearcut harvests would decrease continuity of closed conifer habitat, create edge effects, and maintain a component of young stands over the landscape in the long-term. Because clearcuts would create different effects than the Proposed Action, cumulative effects of the two would likely be limited to potential short-term increases in downed wood and consequent bark beetle activity.

### *2.3.1.2 Alternative 2: No Action Alternative*

Under this alternative, no density management or CWD creation would take place. Stand density would continue to increase. Development toward late-successional forest conditions in these stands is expected to continue to slow unless some form of natural disturbance occurs that creates openings in the units. Disturbance events and endemic levels of insects and disease would be an agent of stand development, but is not expected to result in accelerated development of late-successional structure with any degree of certainty. As the level of competition among the trees remains high, crown development (live crown ratio, crown expansion, and branch growth) and diameter growth rate would decrease. Competition-related mortality would increase, resulting in a gradual increase in coarse woody debris recruitment, mainly from the smaller-diameter trees. However, levels would likely remain much lower than the levels proposed for creation in Alternative 1, and would be composed of smaller diameter trees. Suppression mortality may trigger additional beetle activity, speeding canopy gap creation. Until canopy gaps are created, existing conifer understory can be expected to decline in vigor, and understory tree and vegetation levels would remain low or further decline.

Cumulative Effects

Potential cumulative effects could occur in future decades as a result of declines in stand resiliency and slower development of some wildlife habitat components, if this area and other planned project areas were not treated. Because nearby projects have occurred recently that improved stand growth and structure, effects would probably be limited to the project area.

#### *2.3.1.3 Alternative 3*
Under this alternative, effects to forest vegetation would be the same as Alternative 1 (2.3.1.1).

Cumulative Effects
Cumulative effects to forest vegetation would be the same as Alternative 1 (2.3.1.1)

#### *2.3.1.4 Alternative 4*
Under this alternative, effects to forest vegetation would be the same as Alternative 1 (2.3.1.1), however, helicopter yarding instead of cable yarding the 45 acres would result in slightly higher residual stand densities on those acres because yarding corridors would not be created.

Cumulative Effects
Cumulative effects to forest vegetation would be the same as Alternative 1 (2.3.1.1)

### 2.3.2 Threatened or Endangered Wildlife Species, Habitat and/or Designated Critical Habitat

Affected Environment

The affected environment of the stands in the Wildlife Analysis Area[3] is the same as described in the Forest Vegetation section of the analysis (2.3.1).

Federal lands within the Nestucca Watershed and Hoag Pass Wildlife Analysis Area are distributed in a relatively contiguous fashion, thereby lending themselves to the long-term management of larger blocks of late-seral habitat. However due to a history of large fires in the late 19th century, the oldest stands within the area date from about 1890. Existing late-seral habitat within the Analysis Area is present almost exclusively on BLM land; approximately 9,529 acres or about 50% of the BLM land within the Analysis Area (approximately 42% of all ownerships) is considered to be mature or late-seral habitat. Much of this late-seral habitat is located in scattered, relatively small patches fragmented by young plantations generally about 20 to 100 acres in size. However, a block of contiguous mature forest within the Analysis Area approximately 1,400 acres in size and located south of the Nestucca River, represents the largest relatively contiguous block of mature forest habitat on BLM land within the Tillamook Resource Area. This block of mature forest has a very low relative road density, especially currently drivable roads and is basically centered on the Jane Creek drainage. It is largely contained within T3S., R6W., sections 19, 30 and T3S., R7W., sections 23, 24, 25, 26, 35, 36 W.M..

*Course Woody Debris*
Course Woody Debris is a very important habitat feature for a wide range of species. There is considerable variation in the amount and condition of down wood, snags, and total Course Woody Debris (CWD) volume within the proposed density management treatment units. With an average of 2,858 cubic feet of CWD per acre in the stands included in the density management treatment areas and in some of the surrounding stands, average levels of CWD are currently near the lower end of the high range (1,980 to 4,840 cubic feet per acre) for Oregon Coast Range stands 25- to 79-years-old as identified in the LSRA. According to the forest survey data averaged across all units, approximately 45% of the CWD volume is contained within down logs and 55% is in the form of snags. It varies by unit, but averaging data from all units approximately 45% of the snag volume is in the later 'soft' decay classes. Hard snags are generally small suppression related mortality or trees

[3] For the purposes of this Environmental Assessment and the supporting Wildlife Biological Evaluation, the "Hoag Pass Wildlife Analysis Area" is defined as the aggregated area of land approximately equal in size and shape to one township (approximately 22,950 acres) but comprised of lands in portions of four adjacent townships. Approximately 83% of the land within the Analysis Area is managed by the BLM, while 6% is managed by the Oregon Department of Forestry and 11% is owned by private industrial timber companies, other companies or private individuals. (Wildlife Biological Evaluation - Project Record Document 46)

associated with root rot pockets. Neither of these types of hard snags are expected to remain standing for a lengthy period of time. The majority of the down wood is in the later 'soft' decay classes. The *Silvicultural Prescription for the Hoag Pass Density Management Project* (Project Record Document #44) contains a series of tables displaying detailed snag and down wood data for the individual units.

Northern Spotted Owl - Federally Threatened (FT)

*Designated Critical Habitat*

Critical Habitat is designated to provide for the conservation and eventual recovery of the species. The proposed Hoag Pass Density Management Project would occur within spotted owl Designated Critical Habitat Unit # OR-41 (USDI 1992). This Critical Habitat Unit (CHU) contains 84,633 acres of which approximately 93 percent is also designated as LSR. Approximately 33 percent of the CHU is currently considered to be suitable spotted owl habitat (2001 baseline data).

*Proximity to Known Sites and RPAs*

There are no historic or known occupied spotted owl sites, or 100-acre core areas as identified in the NWFP, within the project areas. None of the proposed density management treatment units are located within a Spotted Owl RPA (Reserve Pair Area) as delineated within the document entitled *Delineation and Management of Reserve Pair Areas within Oregon's Northern Coast Range Adaptive Management Area* (dated June 1, 2000). However, a small portion of the treatment units are located directly adjacent to the Elk Creek RPA. A total of approximately three miles of the identified haul routes pass through the Elk Creek RPA; these haul routes are the lower portions of Hoag Pass Road and the Dovre Tie Road. It is unknown if this RPA is currently occupied because of the lack of recent survey data for the entire RPA, however it is considered to be a site which is historical in nature; spotted owls were first documented in the area in 1975 and the site has not been known to be occupied for at least two decades.

*Note: The western-most fourth of this RPA was surveyed for spotted owls by BLM surveyors during the 2005 survey season as a part of conducting pre-project owl surveys for the Hoag Pass project areas; additional coverage was obtained thru survey efforts by ODF during the 2004 and 2005 survey season. While several barred owl detections were noted while conducting spotted owl surveys, there was only one detection of a spotted owl within the RPA; it was a male located in the extreme southeastern portion of the RPA on June 20, 2005. This owl was not re-located on follow-up visits to the area.*

The site center for Elk Creek RPA is the nearest known owl site to any of the proposed density management units; it is approximately 2.5 miles to the northwest of the northernmost proposed density management unit and more than five miles from the southernmost units.

*Spotted Owl Surveys*

All of the spotted owl suitable and dispersal habitat in an area of approximately 10,080 acres in size has been or will be surveyed to protocol for spotted owls by BLM surveyors. Roughly 60% of the area was surveyed to protocol during the 2004 and 2005 survey seasons, while surveys for the remaining 40% of the area were started during the 2005 survey season and are scheduled to be completed in 2006, thereby completing survey protocol. Additional survey coverage of an area contiguous and to the north and northwest of the BLM survey area approximately 4,000 acres in size was obtained thru survey efforts by ODF during the 2004 and 2005 survey season (per. comm. Kate Skinner - ODF Forester). ODF surveys resulted in no spotted owl detections. These survey areas represent all suitable and dispersal spotted owl habitat within a minimum of approximately 0.7 miles of the proposed density management treatment units, including connected road work and all portions of the haul routes located on non-paved roads.

The Hoag Pass spotted owl surveys resulted in no spotted owl detections during the 2004 survey season, however during June and August of 2005 BLM's owl surveys resulted in a total of six spotted owl audible detections – all suspected of being a male. Only one of the follow-up surveys associated with these detections resulted in relocating a spotted owl when a male spotted owl was seen; within ten minutes after the surveyor

lost visual contact with this male spotted owl, a female barred owl was heard at the same location. The nature of the interaction between these birds was not determined. With the furthest distance between the six spotted owl detection points being approximately 4 miles, the spotted owl detections to date have not been concentrated within a single area. In addition to the female barred owl detection noted above there were numerous other barred owl detections noted while surveying for spotted owls.

As a result of the Hoag Pass surveys conducted to date, there have been no spotted owl occupied sites within the Hoag Pass spotted owl survey area identified. Should the owl surveys scheduled to be completed during the 2006 survey season result in the identification of a pair of spotted owls occupying an area within or near the proposed Hoag Pass density management project, the "new information" would be documented in a SIR (Supplemental Information Report) and considered in the Hoag Pass Project Decision Documentation. The interagency Level 1 Team (terrestrial sub-group) for the North Coast Province would be informed to assure compliance with regulations pursuant to Section 7 of the Endangered Species Act of 1973, as amended.

*Suitable Habitat*

Approximately 51% of the BLM land within the Analysis Area is considered to be suitable owl habitat[4]; considering all ownerships this represents 43% of the Analysis area. Approximately 5.7% of the spotted owl suitable habitat within the Analysis Area is proposed for treatment. Much of this suitable habitat is considered to be marginal in quality mostly because of stand age and past management practices.

*Dispersal Habitat*

Currently there is adequate spotted owl dispersal habitat[5] within the Analysis Area to facilitate owl movements. Approximately 18% of the BLM land within the Analysis Area is considered to be spotted owl dispersal habitat, while approximately 51% of the BLM land is considered to be suitable owl habitat. Therefore, approximately 69% of the BLM land within the Analysis Area is either dispersal or suitable habitat. Considering all ownerships, these acres represent approximately 57% of the Analysis Area. An additional but unquantified amount of dispersal habitat is present within the Analysis Area on non-BLM land.

All of the proposed density management treatment areas within the Hoag Pass project, totaling approximately 862 acres, are considered to be either spotted owl dispersal or suitable habitat (306 acres of dispersal, 556 acres of suitable). This represents approximately 6.6% of the BLM forested stands within the Analysis Area which are in a condition to facilitate owl dispersal.

Some of the dispersal habitat within the Analysis Area, including portions of the proposed density management units, is considered poor quality dispersal habitat based upon the young stand age and the extreme high density of trees which could inhibit an owl's ability to fly through the stand. Some of the conditions that keep these younger, more structurally simple stands from being considered suitable owl habitat include the lack of vital habitat characteristic including large trees and structural diversity, the lack of suitable nesting substrates (e.g. large sheltered platforms or large cavities) and the lack of habitat for a suitable prey base, which is primarily the northern flying squirrel in this area.

[4] The spotted owl suitable habitat acreage is based upon the consideration of two factors – stand age or stand QMD (quadratic mean diameter). Acreages were determined by a Geographic Information Systems (GIS ) sort of all conifer stands with at least a 1-bar stocking component (10-39% canopy closure) that is greater than 80 years old; also any stand with a QMD greater than 18 inches as determined by stand exams.

[5] Conifer and mixed conifer-hardwood habitats with a canopy cover greater than or equal to 40 percent and conifer trees greater than or equal to 11 inches average DBH. (Within the Hoag Pass Analysis Area this generally equates to stands greater than approximately 30-years-old).

Marbled Murrelet - (FT)

*Designated Critical Habitat*

Critical Habitat is designated to provide for the conservation and eventual recovery of the species. The proposed Hoag Pass Density Management Project would occur within Designated Critical Habitat for the marbled murrelet (CHU# OR-02-e).

*Proximity to Known Sites*

With the nearest known occupied murrelet site being approximately 2.2 miles from the nearest proposed density management treatment unit or non-paved haul route, there are no known murrelet sites within the vicinity of the Hoag Pass Density Management project areas.

*Note: While the nearest known murrelet site is 2.2 miles from the nearest proposed density management unit, on the morning of July 1, 2005 a dead marbled murrelet, suspected of being a freshly killed "roadkill" was found on the Nestucca Access Road approximately 1.6 miles from the nearest density management treatment unit.*

*Suitable Habitat and Surveys*

Ranging from approximately 28 to 33 miles from the ocean, the Density Management project areas are located within marbled murrelet Zone 1 (NWFP C-10). In Oregon, Zone 1 is located in a band of land extending up to 35 miles inland and Zone 2 is located 35 to 50 miles from the sea; Zone 1 holds a higher likelihood for murrelet occupancy than Zone 2.

Approximately 50% of the BLM land within the Analysis Area (9,529 acres) has potential to be considered marbled murrelet habitat.[6] However, field review of these stands has determined that the vast majority of the these acres contain no suitable nesting platforms and are therefore not considered to be murrelet habitat, or contain just a few platforms and are considered to be very marginal in habitat quality. This is primarily a function of the stands' ages and lack of sufficient crown development. Relatively young stands generally contain lower densities of potentially suitable nesting platforms and these platforms are often of questionable suitability. The oldest stands within the Analysis Area date from approximately 1890.

Several of the proposed treatment units and/or haul routes contain or are in proximity to and contiguous with stands which are known to contain individual trees and/or small groups of a few trees which contain one or more potential nesting platforms. With one exception, all of these known potentially suitable murrelet nest trees were surveyed to protocol during the 2004 and 2005 survey seasons; there were no detections. Protocol surveys associated with potential murrelet habitat within T3S., R7W section 14 were started in 2005 and are scheduled to be completed by August 2006. Should these surveys result in the discovery of murrelets occupying an area within or near the proposed Hoag Pass density management project (including the haul routes), this "new information" would be documented in a SIR (Supplemental Information Report) and considered in the Decision Documentation. The interagency Level 1 Team (terrestrial sub-group) for the North Coast Province - including USFWS, would be informed to assure compliance with regulations pursuant to Section 7 of the Endangered Species Act of 1973, as amended. There is no known additional potential marbled murrelet habitat identified within or near (within 0.25 miles) any of the other proposed treatment areas.

[6] Marbled Murrelet Suitable Habitat is defined as conifer-dominated stands that generally are 80-years-old or older and/or have trees greater than or equal to 18 inches average DBH. In addition, murrelet suitable habitat must include potential nesting structure(s) as described in the March 26, 2004 policy by the Level 2 Team for the North Coast Province.

Bald Eagle - (FT)
Bald eagles generally nest and/or roost within mature forest stands located within one mile of a large major river or lake, or within 0.5 mile of a major tributary. The nearest known bald eagle nest is historic in nature and located along Elk Creek about 2 miles northwest of the nearest proposed density management treatment unit or haul route. There are no known eagle roost sites within the area.

Dispersed eagle usage may occur throughout the Analysis Area including the project areas wherever suitable eagle habitat[7] is present; this eagle usage of the area would most probably occur during the late fall or winter months. Bald eagles are occasionally seen foraging along stretches of the Nestucca River contained within the Analysis Area. However, eagle sightings along the Nestucca River are much more common along stretches of the river located slightly down the drainage, at points west of the Elk Creek/Nestucca River confluence where the river classification changes from a 5th to 6th order stream. This confluence is located near the western edge of the Analysis Area approximately 1.2 miles from the nearest treatment unit.

Approximately 18% of the BLM land within the Analysis Area or approximately 3,371 acres is considered to be suitable habitat for the bald eagle. Approximately 1.7 % (218 acres) of this suitable habitat is within a proposed density management treatment unit.

Environmental Effects

#### *2.3.2.1 Alternative 1: Proposed Action*

After treatment the stand is expected to respond as is described in the Forest Vegetation portion of the analysis (2.3.1.1). The treatment would help with the development and diversity of the stands to help maintain or restore habitat for a variety of species.

*Minimizing or mitigating expected short- and long-term adverse impacts*
While project design features to minimize the potential for adverse impacts to existing CWD and natural CWD recruitment processes have been included, both short- and long-term impacts to CWD habitat features would be expected. It is likely that the substrate of some of the larger, later-decay class logs would be damaged during yarding. It is also probable that the majority of small snags within the treatment units would be inadvertently knocked over during felling or yarding, or intentionally felled for reasons of safety. In addition to this direct loss of many of the existing snags, already a limiting habitat feature, the density management treatment would be expected to also have an indirect impact upon snag habitat by largely curtailing the natural development of snags for the next 20-30 years.

To offset these expected adverse impacts, project-wide and unit specific mitigation measures addressing CWD objectives have been designed considering a number of factors; they are described in the project design features and silvicultural prescription.

Northern Spotted Owl - (FT)
*Designated Critical Habitat*
The proposed Hoag Pass Density Management project would occur within spotted owl Designated Critical Habitat (CHU # OR-41). Approximately 33 percent of the CHU currently is considered to be suitable spotted owl habitat (2001 baseline data). The primary constituent elements of spotted owl critical habitat are those physical and biological habitat features which support nesting, roosting, foraging, and dispersal. Any activity occurring within designated critical habitat which impacts any of these primary constituent

[7] Suitable habitat for bald eagles is defined as conifer-dominated habitats that generally are 80-years-old or older and located within 1.0 mile of a major river or 0.5 mile of a major tributary. Within the Hoag Pass Analysis Area and for the purposes of this analysis, a major river is considered to be 6th order or larger (the Nestucca below the confluence with Elk Creek), and a major tributary is considered to be 5th order (the mainstem Nestucca River above the confluence with Elk Creek and the lower portion of Elk Creek - to the Tucca Creek confluence).

elements may affect spotted owl critical habitat (*USFWS Biological Opinion reference 1-7-05-F-0005*). The effects of light to moderate thinning on spotted owl critical habitat would be variable depending on the stand treated and the time since treatment. These types of actions may involve minimal short-term adverse impacts, but are expected to result in long-term improvements to owl habitat as the projects have been designed to promote the earlier development of late-successional habitat.

Because habitat function is expected to be only minimally impacted in the short-term, the light to moderate thinning of 862 acres within designated critical habitat unit OR-41 is not expected to alter the function of spotted owl critical habitat. This 862 acre project area represents 1.0 % of the critical habitat unit OR-41. The Hoag Pass project would impact 556 acres of suitable owl habitat; this represents 2.0 % of the suitable habitat within the critical habitat unit OR-41.

*Spotted Owl Known Sites and RPAs*
The nearest known spotted owl site, the Elk Creek site, is located approximately 2.5 miles from the nearest proposed density management treatment unit. None of the proposed treatment units are located within a spotted owl RPA although a portion of the haul routes passes through the outer portion of the Elk Creek RPA. The proposed project is consistent with the management recommendations contained within the document entitled *Delineation and Management of Reserve Pair Areas within Oregon's Northern Coast Range Adaptive Management Area* (dated June 1, 2000).

*Disturbance*
All suitable and dispersal spotted owl habitat within or within approximately 0.7 miles of the proposed density management treatment units, including connected road work and all portions of the haul routes located on non-paved roads, has been or will be surveyed to protocol. As a result of the Hoag Pass surveys conducted to date, there have been no spotted owl occupied sites within the Hoag Pass spotted owl survey area identified.

*Suitable habitat*
As discussed, an Analysis Area of approximately 22,950 acres was delineated. Approximately 51% of the BLM land within the Analysis Area is considered to be suitable owl habitat; considering all ownerships this represents 43% of the Analysis area. Approximately 556 acres of this suitable spotted owl habitat are proposed for density management treatments; this represents 5.7% of the spotted owl suitable habitat within the Analysis Area. Implementation of the proposed density management would not be expected to remove this surveyed, suitable spotted owl habitat from a habitat condition which is suitable to spotted owls. This is based upon the projects design features including the fact that the average post-harvest canopy closure within stands currently considered to be suitable habitat is expected to be greater than 60%.

The proposed action is expected to result in a number of beneficial impacts to current and future owl habitat. The project would result in an increased average tree diameter; an increase in the growing space dedicated to crown development; enhancement of the existing tree species diversity; promotion of the development of vertical and horizontal stand diversity; and an augmentation of the current CWD levels. Larger overstory trees would eventually develop into larger snags and logs, both of which in most units are lacking in the more recent decay classes. Reserving all hardwoods would not only maintain and enhance species diversity within the stand, but add to the structural diversity of the overstory and help maintain or increase nesting opportunities for many cavity nesting species. It is expected that development and diversity of the understory shrub species would also be enhanced as vegetation responds to the thinning.

Thinning in suitable habitat may however produce some short-term adverse affects to spotted owl habitat and temporarily reduce the quality or function of the habitat. Short-term impacts may include an influence on prey availability, microclimate conditions, and/or higher vulnerability to predators. However, these effects would generally ameliorate over time as the stands continue to grow and would be expected to ultimately provide better habitat structure in the long term than would occur without treatment. This would

improve the quality of future habitat for several woodpecker species and indirectly the habitat of flying squirrels. Throughout the range of the northern spotted owl, flying squirrels are of primary importance as a food source for the owl. In the northern part of the range where there are few if any woodrats, the flying squirrel can make up over 60% of the diet of spotted owls (Carey 1991, Forsmen et. al. 1991). Flying squirrels have been found to be about twice as abundant in late-seral and old-growth stands as in younger seral stands and their presence is positively correlated to the abundance of large snags (Carey 1991, Corn and Bury, 1991). Carey finds that flying squirrels apparently play a major role in determining the carrying capacity of Douglas-fir and western hemlock landscapes for spotted owls; he also notes that most cavities used by flying squirrels seem to be abandoned woodpecker holes; thus postulating that the presence of woodpeckers may be essential for high populations of northern flying squirrels (Carey 1991).

Snags and the processes and factors impacting their development and persistence are important elements to consider. It could be expected that many of the existing, especially smaller less-stable snags would be inadvertently knocked over during the harvest operations or purposefully felled for reasons of safety. In addition to this direct loss of many of the existing snags (already a limiting habitat feature) the density management treatment would be expected to also have an indirect impact upon snag habitat by largely curtailing the natural development of snags for the next 20-30 years. The loss of the future snag potential coupled with the direct loss of a portion of the few snags that currently occur in the project area could have an adverse impact on woodpecker populations and indirectly, the secondary cavity users that depend upon woodpeckers to provide shelter. A secondary cavity user that is of particular importance to the spotted owl as a major prey species is the northern flying squirrel. However, these potential adverse impacts to snag habitat would be mitigated through proactive project design features to create snags or snag-topped trees within some of the treatment units - primarily within those stands currently considered to suitable owl habitat. Additionally, design features to provide for natural snag recruitment processes within adjacent stands, such as within Riparian Reserve no-harvest buffers would benefit the overall CWD habitat conditions within the area.

*Dispersal Habitat*

While there are some potential short-term adverse impacts to the 306 acres of dispersal habitat proposed for thinning, post-harvest these acres are expected to continue to function as dispersal habitat. This is based upon the fact that the average post-harvest canopy closure within stands currently considered to be dispersal habitat is expected to be greater than 40%; it is expected to be approximately 50%. While small openings, patch-cuts, roads, landings, and areas thinned to wider spacings to control root disease or meet stand development objectives may result in isolated portions of these thinning treatment areas having a post-treatment canopy closure of less than 40%, the project areas being proposed for thinning as a whole are not expected to be removed from a condition to function as spotted owl dispersal habitat.

Post-treatment, these younger stands would be placed on a trajectory to attain some late-successional forest conditions sooner than if the stands were left unthinned. Aside from the attention to canopy closure, the project incorporates other design features to minimize or mitigate the potential for adverse impacts and to promote the development of late-seral stage habitat and natural processes within the treated stands. Also, the scattered nature of the treatment units across eleven sections and are intermingled with areas of suitable or dispersal habitat which are not planned for density management.

The proposed thinning is expected to result in increased or maintained growth rates of the understory conifer and shrub species as well as the trees retained within the overstory. This would result in the development of some features of spotted owl suitable habitat within these stands currently considered to be dispersal habitat earlier than would occur without treatment. These features include large trees within the overstory which would be potential sources of future snags and down logs, and generally a more diverse and/or complex vertical and horizontal stand structure.

Cumulative Effects

Cumulative impacts to spotted owl dispersal habitat are expected as a result of the Hoag Pass Project however they are not considered to be significant based upon the fact that there would be an adequate amount of untreated habitat within the Analysis Area that is in a condition to facilitate owl dispersal. This is especially notable considering that the proposed action, as well as the identified past, present and reasonably foreseeable future BLM actions, are not expected to remove the treated stands from a condition capable of functioning as spotted owl dispersal habitat. While the effects of the thinning operation may linger for decades, these effects would generally ameliorate over time as the stands continue to develop and would be expected to ultimately provide better habitat structure in the long term than would occur without treatment.

Approximately 37% of the 3,500 acres of BLM spotted owl dispersal habitat within the Analysis Area (about 1,325 acres) and 250 acres of suitable spotted owl habitat is identified as being treated with past, present or reasonably foreseeable future BLM density management projects (see Appendix 1 of the EA) since 1994. The habitat within all of these project areas could be expected to be impacted similarly as the Hoag Pass Density Management Project areas as all projects promote similar stand management objectives as the Hoag Pass Project. All of these project acres are expected to continue to function as dispersal habitat post-treatment.

Cumulatively, a total of 2,437 acres or 19% of the forested stands within the Analysis Area that are in a condition to facilitate owl dispersal would be treated with a Density Management project. This includes 1,575 acres treated with past, present or reasonably foreseeable future BLM density management projects and 862 acres treated by the Hoag Pass project. This would result in 10,592 BLM acres (and an additional, unquantified amount of dispersal habitat on non-BLM land) within the Analysis Area that is currently in a condition to facilitate owl dispersal as being unimpacted (beneficially or adversely) by a recent or foreseeable future commercial Density Management treatment. This represents 55% of the BLM ownership or 46% of all ownerships and is considered an adequate amount of habitat within the Analysis Area that is in a condition to facilitate owl dispersal, especially given the fact that none of the identified BLM density management projects would remove the treatment areas from a condition to function as dispersal habitat.

Marbled Murrelet - (FT)

*Designated Critical Habitat*

Critical Habitat is designated to provide for the conservation and eventual recovery of the species. The proposed Hoag Pass Density Management Project would occur within Designated Critical Habitat for the marbled murrelet (CHU# OR-02-e).

The primary constituent elements of murrelet Critical Habitat are (1) individual trees with potential nesting platforms and (2) forested areas within 0.5 mile of individual trees with potential nesting platforms with a canopy height of at least one-half the site-potential tree height (USDI 1996). Some of the treatment units contain and/or are the vicinity of and contiguous with, surveyed potentially suitable marbled murrelet nest trees. No potentially suitable murrelet nest trees would be felled as a part of the Hoag Pass project and no openings would be created within one tree length surrounding a potential murrelet nest tree. Forested stands within 0.5 mile of trees with potential nesting platforms (with a canopy height of at least one-half the site-potential tree height) would be treated by the density management project; canopy closure would be reduced to approximately 50-70% within the areas treated (although canopy closure may be reduced to 40 or 60%, depending on the type of spotted owl habitat).

*Surveys and Disturbance*
There are five general areas within and/or contiguous with density management treatment units that contain stands that include individual trees and/or small groups of trees containing potentially suitable murrelet nesting platforms. All of these potentially suitable murrelet nest trees were or will be surveyed to protocol. There is no additional potential marbled murrelet habitat known to be within, or contiguous with and near (within 0.25 miles) any of the other proposed treatment areas.

The density management project does not include daily time restrictions (two hours after sunrise to two hours before sunset) based upon the fact that all known potential or suitable murrelet habitat within 0.25 miles of the treatment units would be surveyed.

*Habitat*
No potentially suitable murrelet nest trees would be felled as a part of the Hoag Pass project and no openings would be created within one tree length surrounding a potential murrelet nest tree. However, thinning in the vicinity of these potentially suitable nest trees would change the current and future character of the treated stands. This may have some impact (beneficial and/or adverse) upon the likelihood that at various points in the future these trees are used successfully by murrelets for nesting. The Hoag Pass project is expected to result in the development of some features of marbled murrelet suitable habitat earlier than would occur without treatment. These features include large trees within the overstory containing platforms suitable for murrelet nesting, gaps in the canopy and generally a more diverse stand structure within the areas treated.

Cumulative Effects
No cumulative effects to marbled murrelets or their habitat have been identified.

Bald Eagle - (FT)
*Potential for Disturbance*
Dispersed eagle usage may occur throughout the Analysis Area including the project areas wherever suitable eagle habitat is present; this eagle usage of the area would most probably occur during the late fall or winter months.

The potential dates of operation for the proposed project are such that activities may occur which would generate noise above the ambient level during the eagle breeding season (January 1 to August 31). However, there are no known eagle nests within the vicinity of the project and based upon the high visibility of eagle nests none are expected. As a result of harvesting and hauling, the project may generate high activity levels and noise which could displace dispersed foraging, perching or resting eagles; it would be expected that these displaced birds would simply, temporarily relocate to other areas containing suitable habitat and lower levels of activity.

*Habitat*
Approximately 18% of the BLM land within the Analysis Area or approximately 3,371 acres is considered to be suitable habitat for the bald eagle. The proposed action would treat approximately 218 acres of this suitable eagle habitat. These patches of bald eagle suitable habitat are probably best suited for dispersed roosting and resting rather than nesting based upon the general lack of suitable nest trees. Post-treatment these acres of suitable habitat are expected to continue to function as suitable eagle habitat.

Cumulative Effects
No cumulative effects to bald eagles or their habitat have been identified.

### *2.3.2.2 Alternative 2: No Action Alternative*

Under the "No Action" Alternative, no forest management activities would occur within the 862 acres of proposed project areas at this time; natural processes would continue and the forested stands would continue to grow and develop without management intervention. The identified impacts of the action alternative would not occur at this site at this time.

Under the "No Action" alternative, the density management treatment of approximately 226 acres of densely stocked forest within the Riparian Reserve allocation as proposed under the Alternative 1 would not occur. No existing roads would be decommissioned. The expected benefits from density management treatment and road decommissioning to attaining the ACS objectives and the development of some features of late-seral stage habitat would be expected to occur in a slower time frame than with the implementation of the action alternative as the untreated stands continue to develop naturally. Additional discussion and data of the expected impacts of the "No Action" alternative upon the forest's development is located within the *Silvicultural Prescription for the Hoag Pass Density Management Project* – (see Project Record Document #44).

Cumulative Effects

There are no identified cumulative impacts to wildlife associated with the No Action Alternative.

### *2.3.2.3 Alternative 3*

Under Alternative 3 to the Hoag Pass Density Management project all project design features are identical to Alternative 1 except the density management project includes (re)placing the 3 culverts on BLM road 3-7-36.6 and then removing them at the end of the timber sale contract.

Selection of Alternative 3 would result in similar impacts to wildlife resources as described for Alternative 1. As with Alternative 1 (2.3.2.1), post-harvest BLM road 3-7-36.6 would not be open for vehicular traffic and therefore not contribute to an increased level of potential disturbance and the identified impacts to habitat features would be expected to be of a similar nature.

Cumulative Effects

Aside from the same cumulative impacts to spotted owl dispersal habitat as identified under Alternative 1, there are no identified cumulative impacts to wildlife resources associated with Alternative 3.

### *2.3.2.4 Alternative 4*

Under Alternative 4 to the Hoag Pass Density Management project all project design features are identical to Alternative 1 except the density management project does not include (re)placing the culverts on BLM road 3-7-36.6 but rather yarding all the stands along the road with a helicopter.

Selection of Alternative 4 would generally result in similar impacts to wildlife resources as described for Alternative 1 (2.3.2.1). As with Alternative 1, post-harvest BLM road 3-7-36.6 would not be open for vehicular traffic and therefore not contribute to an increased level of potential disturbance. Because treatment units would be thinned with a helicopter rather than more conventional ground- or cable-based logging systems there would be no logging corridors constructed; this would result in a slightly different configuration of the reserve trees and the post-harvest stand may be slightly denser. With no corridors being created, there would likely be fewer reserve trees needing to be cut and therefore reserved as down logs. Helicopter yarding would also be expected to result in less logging damage to the crowns and boles of the reserve trees.

Cumulative Effects
Aside from the same cumulative impacts to spotted owl dispersal habitat as identified under Alternative 1, there are no identified cumulative impacts to wildlife resources associated with Alternative 4.

## 2.3.3 Threatened or Endangered Fish Species or Habitat

Affected Environment

The proposed action would primarily occur within two 5th field watersheds:

*Nestucca*
Within the January 19, 2006 Federal Register Notice the proposed listing of Oregon Coast coho salmon was withdrawn. With this federal notice in place, there are no fish species with ESA status or designated Critical Habitat areas within the Nestucca Watershed.

*Yamhill*
Within the Yamhill Drainage the action area contains three first order stream crossings on the gravel surfaced Hoag Pass Road approximately a mile above habitat occupied by Upper Willamette steelhead. The streams in this area are small, intermittent and low gradient. This haul route is planned to be used for extended season hauling. There is no listed or proposed critical habitat for Upper Willamette steelhead or Upper Willamette chinook within the Willamina 5th field watershed.

### *2.3.3.1 Alternative 1: Proposed Action*

Environmental Effects

There would be no thinning, road construction/reconstruction/ decommissioning and a limited amount of haul on gravel roads within the Yamhill Watershed. No direct or indirect effects are anticipated to Upper Willamette steelhead (UW steelhead) or Upper Willamette chinook. There would be no effects to UW steelhead associated with haul generated sediments along Hoag Pass Rd. The three crossings are small, intermittent, low gradient streams located over 1 mile from UW steelhead habitat.

Cumulative Effects
There is no critical habitat listed in the Willamina Creek 5th field watershed (in the Yamhill watershed) for either steelhead or chinook. No effects to critical habitat are predicted. This action is not anticipated to have any effects to Upper Willamette steelhead and as such there should be no cumulative effects to this species.

### *2.3.3.2 Alternative 2: No Action Alternative*

As this is a no action alternative there would be no change from the current condition. The short segment of haul within the Yamhill Watershed on the gravel surfaced Hoag Pass Rd would not occur. No impacts to listed fish are anticipated with the no action alternative.

Cumulative Effects
No affects to ESA listed species are predicted. There are no affects that could be cumulative in nature.

#### *2.3.3.3 Alternative 3*

This alternative would be no different than the proposed action for T& E species within the Yamhill watershed as the placement and removal of the three culverts are not located within the same watershed as the listed species. The amount of haul and its timing would remain the same as the proposed action.

Cumulative Effects

This action is not anticipated to have any effects to Upper Willamette steelhead and as such there should be no cumulative effects.

#### *2.3.3.4 Alternative 4*

This alternative would be no different than the proposed action for T& E species within the Yamhill watershed.

Cumulative Effects

This action is not anticipated to have any effects to Upper Willamette steelhead and as such there would be no cumulative effects.

Cumulative Effects of road-related sediment for all action alternatives

The majority of the proposed haul roads within the action area are managed by the BLM. Few are used extensively for year-round hauling either by BLM or other landowners under Right-of-Way Agreements. Any other non-federal actions occurring concurrently with the proposed action along mutual haul routes would generate the same fine sediments. There would still be only a minimal potential of sediment transmission into areas where there are listed fish. Haul on specific road segments during the wet season generally has the potential to deliver sediments in greater amounts due to increased volume of water, seasonal loss of ditch and stream vegetation, and breakdown of the road surface or sub surface. There is limited potential of concurrent haul within the action area as most of the private or state managed lands that would use these roads have already been harvested. An estimated 3 million board feet of timber are hauled within the Upper Nestucca each year by state and private interests. Based on the limited potential of concurrent haul on this short section of Hoag Pass Road, located in the headwaters of Willamina Creek, no cumulative effects are anticipated.

### 2.3.4 Water Quality

Affected Environment

The proposed action area is in the Nestucca 5th field watershed (HUC #1710020302). The upper Nestucca watershed is designated in the Salem District RMP as a Tier 1 Key Watershed. A Watershed Analysis (WA) was completed in 1994. The following characterization is based upon the 1994 Watershed Analysis, BLM geospatial data, OWRD Water Right Information System data (http://www.wrd.state.or.us/ ), ODEQ water quality information (http://www.deq.state.or.us/wq/) and, knowledge gained while traversing the area.

The Nestucca watershed covers approximately 257 square miles and is located on the west side of the northern Oregon Coast Range. The drainage pattern is dendritic. Elevations range from sea level (Nestucca Bay) to 3,130 feet (Mt. Hebo). Nearly all of the proposed treatments areas lie within the Upper Nestucca River/Elk Creek 6th field watershed (11,715 acres). A small portion (25 Acres) of the proposed Density Management is in the Upper Nestucca River /Testament Creek 6th field watershed (16,377 acres).

The watershed is underlain by marine volcanic and sedimentary rocks with intrusions of younger volcanic material in the higher elevations (Wells, 1994). The area is characterized by high rates of tectonic uplift and

steep slopes. The dominant erosion processes within the watershed is mass movement with shallow slides (debris slides and flows) the most common active type.

The watershed has a maritime climate, characterized by cool, wet winters, and warm, dry summers. Rain is the primary peak flow generating process, averaging about 80 to 120 inches annually. It comes mainly in the fall and winter. The transient snow zone (TSZ) for this area is assumed to be 2,000 to 2,880 feet. During some wetter and colder winters, snow persists for up to several weeks in the higher areas of the project area. Water flow is dominated by direct storm runoff as subsurface flow. Overland flow is rare on undisturbed forest floors.

Land ownership in the watershed is mainly federal (about 65%) and is used primarily for timber production (about 86% of the watershed). Most of the remainder is used for agriculture production in the lower watershed. Road density in the Nestucca watershed is 5.3 miles per square mile.

Some of the roads that would be used in the project have culverts that are undersized or damaged. The Jane Creek Road is mid-sloped with 11 stream crossings and shows signs of instability and deterioration. Road 3-7-36.6 was placed in an "erosion-resistant" condition (removal of three culverts, establishment of non-drivable water bars, and closure to all vehicular use) prior to this project.

All lands within the project areas drain into the portion of the upper Nestucca River between 1¾ mile downstream of Elk Creek (RM 35) and 1/5 mile upstream of Fan Creek (RM 41). Most streams in the project area are small headwater streams. The largest streams are three 3rd order streams to the north of the Nestucca River and one 4th order (Jane Creek) and ten 3rd order streams to the south of the Nestucca River. Project streams are Rosgen types A. and B. Channels typically range from 2 to 15% gradient, are entrenched, and are strongly constrained by steep hillslopes with little or no terrace development with low sinuosities. The dominant substrates are angular, large gravel, cobble, boulder, and basalt bedrock. The maximum average bankfull width is less than 10 feet. Many of the nonfish-bearing streams are dry in the summer and fall.

Large woody debris (LWD) in channels is a major structural forming element and is critical for reducing stream velocity, protecting banks from erosion and aggrading streams. Based upon data from ODFW physical habitat surveys in the upper Nestucca watershed below McGuire reservoir (ODFW, 1997, 2000), BLM sedimentation and bed stability study (BLM, 2005), and personal observations, most projects streams are lacking in LWD and have simplified streams habitats.

The primary beneficial uses of surface water in the project area are for anadromous fish passage, salmonid fish spawning and rearing, resident fish and aquatic life, and recreation. The most sensitive uses are cold water aquatic life and water contact recreation. There is one dam in the watershed -McGuire Reservoir, on the Nestucca (RM 49), about 6.5 miles upstream of the project areas. There are no known municipal or domestic water users within 10 miles downstream of the project area.

The Nestucca watershed has streams segments on the Oregon Department of Environmental Quality (ODEQ) 303(d) 2004 list as water quality limited. They include the Nestucca River from Powder Creek (River Mile 28.9) to headwaters for habitat modification due to lack of large wood and for dissolved oxygen due to inadequate oxygen levels. The Nestucca mouth to Powder Creek is listed for flow modification due to inadequate stream flows at times. The Nestucca Bay is listed for bacteria due to excessive fecal coliform. The ODEQ has established Total Maximum Daily Loads (TMDLs) for bacteria, sediment, and temperature in the Nestucca watershed. They are applicable to all lands with intermittent or perennial streams (including Nestucca River) that drain into Nestucca Bay (ODEQ, 2002). TMDLs are the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. These allocations are designed to achieve water-quality standards.

Environmental Effects

### *2.3.4.1 Alternative 1: Proposed Action*

At the 5th field watershed scale, the proposed action is unlikely to measurably alter the current watershed conditions either by affecting its in-stream flows, physical integrity, water quality (i.e., stream temperature, pH, dissolved oxygen, and sediment regime). Any water quality effects from the proposed action would be within the range effects described in the Salem District RMP/EIS (Chapter 4-14 to 4-19).

Road Density

*Proposed Action*

There would be no increase BLM road mileage from the baseline within the Nestucca watershed, a Key Watershed management objective. BLM has fully decommissioned 6.0 miles of roads and partially decommissioned 36.3 miles of roads since the Salem RMP/EIS Record of Decision was signed in 1995 (the baseline). The proposed action would result in the construction of 1.1 miles temporary roads and 0.3 miles of permanent roads. Therefore BLM road mileage from this action would continue to remain below the baseline mileage.

*Connected Action-Road Work (Effects analyzed under previous NEPA documents)*

There would be a 3.9 miles net decrease in BLM road mileage within the Nestucca watershed. Approximately 4.2 miles of road would be decommissioned.

Stream and Peak Flows

Timber harvesting in western Oregon can increase local base flow (summer low flows). More water in streams in the summer can lower stream temperatures, increase instream wetted area and volume. The proposed action is unlikely to measurably change the local base flow. Timber harvest would remove less than half of the canopy cover in less than 8% of any affected subwatershed. Several studies have found that partial cuttings on a small portion of the area at any one time have no significant effects on stream flow (Beschta, et al, 1995, Adams and Ringer, 1994). After timber harvest the remaining vegetation would quickly use any increased soil moisture that becomes available.

The main concerns for increased peak flows is that it can increase downstream flooding, accelerate stream bank erosion, change channel morphology (e.g., substrate scour), and increase sediment and turbidity. The primary means by which forest management can change peak flow are vegetation removal (e.g. timber harvest) and road construction.

*Timber Harvest*

The proposed action, timber harvest, has a low risk for increased stormflow volume (peak flow enhancement). A preliminary analysis for the risk of peak flow enhancement as the result of timber harvest was assessed using the Hydrologic Condition Assessment in the Oregon Watershed Assessment Manual (OWAM, pp. IV 8-17 and IV-15-17). The assessment is based upon the assumption that the risk of peak flow enhancement is proportional to the percent of land in a drainage located in the Rain-On-Snow (ROS) area and the portion of this area with less than 30% crown closure. Subwatersheds having 75% or more of land in the rain dominated zone are considered to have a low potential risk of peak-flow enhancement. Risk of peak flow enhancement was determined by plotting the percent area in ROS vs. the percent area in the ROS with crown <30% on graph in Graph 1. Table 4 below displays the results of the assessment.

This assessment indicates that the Elk Creek and Testament Creek watersheds are currently at low risk of enhancement of peak flows. Under the Proposed Action, the existing overall average overstory canopy closure of 74% would be reduced to a range of 40 to 60%. Therefore the proposed action would result in no additional risk. According to this assessment, Elk Creek subwatershed, the only drainage area in the project area with a sizeable area with above the rain-on-snow elevation, would need to have over 60% of its area with a crown closure under 30% to have a potential risk of peak flow enhancement. This is not likely to occur since the majority of the ROS area is managed by BLM.

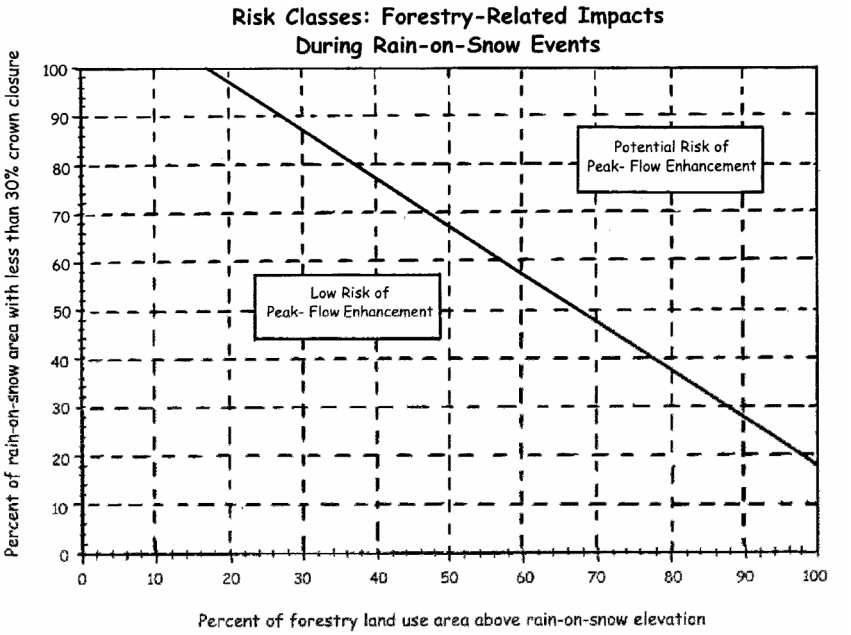



**Table 5: Results of Risk for Peak Flow Enhancement**

| 6th field Watershed Name | Area (Acres) | Percent of Watershed in ROS Areas* | Percent of ROS Area that would be treated | Percent of ROS Area with <30% Current Crown Closure** | Peak-Flow Enhancement Risk |
|---|---|---|---|---|---|
| Elk Creek | 11,696 | 40.6 | 4.5 | <5 | Low |
| Testament Creek | 16,377 | 22.4 | 0.1 | <5 | Low |

- The ROS area is assumed to have a lower boundary of 2,000 feet.
- ROS area with <30% crown cover determined by the analysis of 2004 aerial photographs

*Roads*

Proposed Action, road improvement and new construction, are unlikely to effect on peak flows. The vast majority of roads to be used already exist. New temporary roads would be built are mostly on ridgetops, do not cross Riparian Reserves, and have no direct hydrologic connections. According to the OWAM assessment, drainages with more than 4% in roads are at increased potential of experiencing more than a 10% increase in peak flows. Roads within the project area occupy approximately 1.8% of each drainage area. The Proposed Action of constructing 1.4 miles of temporary roads would increase this value 1.9%.

Physical Integrity

*Proposed Action*

The replacement of three culverts in the 3-7-36.6 road would result in minor, short-term (<3 years) channel alterations on two small headwater streams. Most of the disturbance would occur within the existing road prism. A small amount of soil and vegetation disturbance would occur adjacent to the streams. Little alteration of the channel morphology is expected upstream and downstream of the crossing.

Thinning trees within Riparian Reserves may reduce the amount of LWD that could potentially be recruited into streams and alter channel morphology. The amount of LWD reduction is expected to be small for the following reasons: No trees would be removed within the 50 to 100 foot "no cut buffers" and only smaller sized (<23 inches in diameter) trees would be removed within RRs; areas prone to instability would not be logged (often the major source of LWD in headwater streams); specific treatments would be implemented to retain a greater number or portion of trees in approximately 21 acres of the Riparian Reserves. In the short-term (<10 years) the small reduction of LWD is expected to have a minimal effect on channel morphology at the site scale and negligible and unmeasureable effect at the project level (6th and 7th field watershed scales) and 5th field watershed scale. In the long-term (>10 years), thinning is expected to accelerate the growth rate of the trees that remain in the Riparian Reserves and increase the quality and volume of LWD that could be potentially recruited to streams and add channel complexity.

*Connected Action-Road Work (Effects analyzed under previous NEPA documents*
Replacing approximately 40 culverts and removing 11 culverts would result in minor channel alterations. Most of the disturbance would be confined to existing roads and small area in existing roads. In the long-term, this action would have a beneficial effect by reducing the risk of road failure and improve stream condition and function in the southern portion of Jane Creek Road (3-7-36) with the removal of culverts.

Sediment and Turbidity
The primary way by which the proposed action could contribute sediment and turbidity is timber yarding, timber hauling, roadwork, and construction and use of helicopter landings.

*Timber Yarding*
Timber yarding is unlikely to increase sediment delivery into local streams. All areas showing signs of potential instability were removed from timber harvest (Section 2.3.6, Soil). Appropriate Best Management Practices (BMPs) and project design features would be used (Section 2.2.2.2) to minimize soil disturbance. Most soil disturbance would be relatively light as approximately 78% of the treatment area would be cable or helicopter yarded. Ground-base yarding would be restricted to the dry season and have effectively up to approximately 150 feet of no-harvest buffers. No-harvest buffers (min. 50 feet for non-fish bearing streams and min. 100 feet for fish bearing streams) would be placed along both sides of streams. Most sediment produced from logging would travel a short distance before being trapped by duff, woody materials or other obstructions.

*Timber Hauling*
Hauling would occur over approximately 22 miles of gravel surfaced roads and 2 miles of natural surface roads in the Nestucca watershed and approximately 0.5 miles of gravel surface roads in the Willamina watershed. Most of the hauling would occur in the dry season (generally June 1 through October 15) over roads that are expected to be in good condition. Approximately 5.4 miles of roads could be used in the extended dry or wet season. Hauling could potentially cross about 63 streams crossings, nearly all of which are small first or second order streams. Extended season roads cross 8 low-flowing headwater streams. Because there are several haul possible routes, the number of crossings varies depending upon the haul route chosen.

This action would likely contribute sediment and increased turbidity levels below stream crossings. The effect would be of very limited magnitude and duration (<3 years). Most hauling would occur over well maintained, low gradient, gravel-surfaced forest roads that would be dry. Most stream crossings are high up in the watershed and would be dry or would have very little flow. The extended season roads are located on the upper watershed mainly on ridge tops and benches. Their use would be subject to additional seasonal stipulations (Section 2.2.2.2) and contract oversight. Most of the sediment that reaches streams would be trapped, at least temporarily, in their upper reaches. As sediment is transported downstream it would be gradually diluted by tributaries. It is expected to be indistinguishable (unmeasureable) from

background levels where beneficial uses (e.g., fish) are located and at the project level (6th and 7th field watershed) scale.

*Roadwork*
Proposed work on 1.4 miles of new road construction, 220 feet of road renovation/reconstruction on a natural surface spur, and subsequent 1.1 miles of road decommissioning is not expected to result in sediment delivery to streams. The roads are on gentle slopes, stable ridgetops or benches away from drainage channels, thereby limiting the potential for routing water and delivering sediment to project area streams. All roadwork would be restricted to periods of low rainfall and runoff.

Reinstalling three culverts on the 3-7-36.6 road would result in localized, limited duration turbidity and sediment increases. Two of the stream crossings are on a high gradient (>20%), intermittent stream. The other crossing is on a small, 1st order perennial stream. Sediment input would be minimized through sediment control measures such as seasonal work restrictions, sediment traps, bypass around the work side, and possible use of filter fabric. The first effect would be a short-term (usually <4 hours) sediment input and turbidity during installation. These effects are not expected to be visible downstream in fish-bearing streams. The second effect would occur with the first sizeable rain, usually in late October or early November. Sediment from the construction site and stored in the stream channel would be transported into the mainstem of the Nestucca. The duration of visible effects on the Nestucca River would not be expected to last more than a day or two. Culverts are unlikely to become barriers to large wood transport to the mainstem Nestucca because the watersheds above the culverts appear to be stable and there are no known geomorphically fresh landslide deposits. Upon completion of the timber sale, the road would be blocked by a new gate. Gating the road should eliminate vehicle use and the potential damage to the road surface and reduce sediment risks.

*Helicopter Landings*
*Proposed Action*
All helicopter landings and maintenance sites would be located by the purchaser and approved by the BLM. BLM has reviewed several potential helicopter landing sites. All of the sites, except one, would be located on ridgetops or benches far away from surface water. Most of them are located on previously disturbed areas, primarily roads. None of these sites would be likely sources of sediment. One potential landing is in an old rock pit referred to as the Davidson rock pit, located along the Nestucca Access Road below Fan Creek. A sediment control plan would be created and implemented so that sediment from the site is not delivered to the Nestucca River.

*Connected Action-Road Work (Effects analyzed under previous NEPA documents*
Approximately 9.1 miles of road would be renovated and improved. This action would include roadside brushing, reshaping and restoring the surface where necessary, maintaining or improving drainage structures, applying rock surfacing where needed, and decommissioning. Many of the culverts in the roads to be used in the project are undersized or in poor condition. Approximately 40 culverts would be replaced on existing haul and access roads. Following timber harvest, the Jane Creek Road (3-7-36) would be fully decommissioned. This would include removing 11 culverts and road fill over culverts, removing sidecast where appropriate, constructing earth barricades to block the road, and subsoiling and revegetating the road surface. Adverse impacts would be minimized with the implementation of appropriate BMPs and project design features such as restricting soil-disturbing work to the period of low soil moisture, limiting instream work to ODFW instream work windows. The connected roadwork actions are expected to result in an average of an estimated 2½ cubic yards of fine sediment for each channel culvert replacement or removal. It is anticipated that all of the culvert -related sediment after project completion would be transported out of the stream channels during the following fall and winter high flows. In the long-term, the connected roadwork would improve the current road condition, reduce the risk of mass road failures, and return the sediment regime and hydrology to a more natural condition.

In conclusion, project actions (primarily connected roadwork and timber hauling) are likely to increase sedimentation and turbidity in the short-term (<3 years). Most of the increase would come from connected roadwork (i.e., replacing and removing culverts). It is unlikely that they would lead to a measurable change in the alteration of stream substrate composition or sediment transport regime.

Stream Temperature

The primary means by which the proposed action could contribute to increased stream temperature is by removal of shade over streams by thinning trees adjacent to streams or placement of cable corridors over stream channels. Approximately 226 acres of Riparian Reserves would be thinned and it is anticipated that there would be about 20 situations where yarding corridors would extend across streams.

The Oregon Department of Environmental Quality's (ODEQ) has targeted all lands (371 square miles) with streams that drain to the Nestucca Bay for temperature TMDL. The TMDL target for temperature is system potential effective shade and channel width.

The proposed action is not expected to remove appreciable shade-producing vegetation within the "primary shade zone" (PSZ) of perennial streams. PSZ is the area that provides shade to perennial streams during the critical period 10 AM to 2 PM. Felling trees over streams to provide for skyline yarding corridors is unlikely to reduce shade levels to have any measurable effect on stream temperatures. A very small portion of the Riparian Reserves would have yarding corridors over streams. Most of the streams are headwater streams with little or no summer flows. Few trees adjacent to streams would need to be cut due to the topography. Yarding corridors would be narrow, maximum width of 15 ft.

No-harvest buffers would be placed along streams (minimum of 50 ft along non-fish-bearing streams and a minimum of 100 ft along fish-bearing streams). No-harvest buffers adjacent to ground-based yarding units would be up to 150 feet. In the project area, the PSZ, (the area that provides shade to perennial streams during the critical period) is estimated to range from 20 to 60 feet. The 50 ft no-cut buffers are sufficient for non-fish bearing perennial streams because these channels are small (< 5 ft wetted channel width) and are commonly confined by steep hillslopes. Thinning would reduce the canopy closure in the secondary shade zone by approximately 50%.

In conclusion, based on the preceding and the BLM/USFS temperature sufficiency analysis (USFS and BLM, 2005), any shade loss from this action would be too small to affect stream temperature. The proposed action would comply with the requirements of the Nestucca Bay Watershed Total Maximum Daily Load (TMDL) for the maintenance of and/or increase in effective shade adjacent to perennial streams.

Cumulative Effects

No cumulative effects would be expected to road density, watershed hydrology (base and peak flows), physical integrity, and stream temperature.

- Road density. Although the length of roads in the project area would increase, all but 0.3 miles of the road in the proposed project would be decommissioned by the completion of the Density Management Thinning project (< 3 years). The total number of miles of BLM roads would remain below the level of roads present when RMP/EIS record of the decision in 1995 was signed. In addition, shortly after timber harvest, an additional 7.7 miles of road used in the project under connected actions would be decommissioned, including the removal of 11 stream culverts in the 3-6-30.4 Road.
- Hydrology (base and peak flows). The proposed action is unlikely to contribute to potential hydrologic cumulative effects. It would not result in any net increase in forest openings in the ROS zone with crown closure <30% and therefore would not add to peak flow augmentation. Proposed new 1.4 miles of new road construction would be on mostly ridgetops and benches with no direct hydrologic connections.

- Physical Integrity. Although numerous culverts would be replaced or removed, disturbance would be localized and most streams appear stable at crossings. Little or no additional disturbance to channel morphology is expected. Cumulatively, the limited magnitude and duration of the effect from culvert replacement/removal and riparian treatment is unlikely to result in any measurable change in water quality at the 5th or 6th field watershed levels.
- Stream temperature. Project actions (timber removal, tree falling to improve fish habitat enhancement, roadside hardwood removal for road maintenance) are not expected to substantially alter effective shade. There would be no other uses affecting this resource. Therefore project actions are unlikely to have a cumulative downstream affect on stream temperatures.

Since some of the actions would likely input sediment to local streams, the action alternatives could potentially contribute cumulatively to excessive sediment. The scale for cumulative effects to sediment is adjacent streams within the project area and streams downstream to Nestucca River at the junction of Bible Creek. This scale was chosen because effects from project actions could overlap in time and space from other actions where they share a common watershed. The following important management activities and natural disturbances have occurred or likely to soon occur in this analysis area:

*Past Projects and Events*

- Several catastrophic wildfires - mid-1800's to the 1910 Hebo Burn; Smaller burns in 1934 and 1939. Increased rates of erosion and sediment delivery and removed large wood in streams and trees for future LWD recruitment.
- Major storms and flooding - 1945, 1950, 1955, 1964-65, 1972, and 1996. Caused numerous landslides, increased sediment loads, and altered channel morphologies.
- Meadow Lake Dam Failure – 1962. Removed riparian vegetation and LWD, scoured channels and disconnected natural floodplains along several miles of the upper Nestucca River below the dam. Failure had significant effects on streambeds, banks and hydrology, resulted in both diminished availability of spawning gravels and an excess of fine sediments.
- Bear Creek soil creep. Soil creep in the Bear Creek subwatershed is a chronic source of sediment to both the lower portion of Bear Creek and the Nestucca River below Bear Creek.
- Construction of McGuire Dam and Reservoir on the Nestucca River – 1968. Moderated the extreme values of both high and low flows, removed wetlands, and changed sediment routing.
- Extensive stream wood cleaning – 1960 or earlier to 1970s. Large quantities of LWD removed from the channels and floodplains with the intention of reducing flooding and improving fish passage. This reduced the quality of habitat and altered the channel morphology and reduced sediment storage.
- Forest Management Activities – late 1960s to mid-1980s. Management of forests in the upper Nestucca River subbasin began in approximately 1960. From this time until the mid-1980s, sources of sediments in the upper Nestucca Watershed were most likely management related.

*Recently Completed, Currently Underway or Soon to be Occurring*

- Several BLM commercial density management projects are recently, partially, or soon to be completed. These include Muletail, Rye Mountain, Willy's Elk, Phoenix, ReBear, Southern Flame, Southern Flame II, Baker Creek I, Baker Creek II.
- Several ODF and industrial timber harvests and associated activities recently completed, currently underway or soon to be occurring within and/or near the Ginger and Cedar Creek drainages, to the east of Jane Creek area in Upper Nestucca subwatershed, and in the upper Bear Creek drainage. The ODF has recently sold (Dec 2005) a partial cut sale referred to as Tucca Head located at T3S., R7W sections 3 and 10, and they are currently planning a FY2008 sale, primarily thinning, called South Ginger at T3S., R7W sections 12. Some of the logging and hauling would occur throughout the year. As a result, additional sediment would likely be generated.
- Enlargement of McGuire Reservoir - 2003-04. Loss of wetlands, increased sedimentation during construction and release of water.

- Extensive habitat restoration focusing on the placement of LWD pieces and boulders to increase the complexity of in channels on the upper Nestucca River mainstem and several large tributaries. Multiple riparian planting projects to increase the potential of natural long term wood recruitment.
- Approximately 20 large culverts replacements in the Nestucca watershed (10 on BLM the remaining on ODF and private lands) to improve fish passage. Two have been completed, several are planned to be implemented in the near future.
- Maintenance and operation of the Upper Nestucca OHV trail system. This includes up to two OHV special events per year.
- Coastal Road Stabilization and Watershed Restoration and Storm-Damage Road Repair Projects. Completion of 6.0 miles of road full decommission (Treatment 4A ) and 36.3 miles of road decommission (Treatment 3B).

Cumulative Sediment Effects

The analysis area includes all intermittent and perennial streams that drain from timber units and roads in the proposed action to the junction of the Nestucca River and Bible Creek.

The primary concern for cumulative watershed effects from this project is excessive sediment. Proposed action, or alternative actions, and connected actions would likely result in addition of sediment. Past actions and events in the watershed (see above) have led to large sediment loads in streams. Multiple timber sales are currently underway and several more will likely occur in the area in the future. Sedimentation was identified as an issue in the 1994 Watershed Analysis. The Nestucca River upstream of Powder Creek has been listed under section 303(d) of the Clean Water Act for being impaired due to excessive sedimentation. In 2002, ODEQ developed a sediment load allocation (TMDL) and a plan to protect the salmonid fish and recreational use in the rivers. In the TMDL, ODEQ established as surrogate target for sediment loading of less than 20 percent streambed area fines in riffle and glide reaches.

The listing was based on the best professional judgment of fisheries biologists in the mid- 1980's. Since its listing, sediment conditions in the upper Nestucca watershed have greatly improved. A combination of recovery from natural events (large fires and floods), improvements in forest practices (road building and logging), and restoration activities have reduced sediment outputs. ODEQ has noted significant water quality improvement in the last decade (ODEQ, February 2004). ODEQ recently rated the lower Nestucca River (Cloverdale, RM 1.7) as "Good" for general water conditions (ODEQ, 2005).

Recent data collected on the upper Nestucca watershed compare favorably to current targets for substratum sediment composition. A 1997 Oregon Department of Fish and Wildlife (ODFW) physical habitat survey conducted on the mainstem of the Nestucca River from Meadow Lake to Alder Glen found that most of the area (90%) meets the target of less than 15% fines or less in riffles and glides (ODFW, 1997). This data, unfortunately, was made by ocular observations and cannot be directly compared to the quantitative information used for the listing.

In an effort to quantitatively address this sediment issue, BLM has undertaken a multi-year project starting in 2004 to assess sedimentation and relative bed stability using a modified EMAP (Environmental Monitoring & Assessment Protocol) methodology developed by the US Environmental Protection Agency (EPA). To date, 45 sites have been sampled on BLM lands (including 10 sites in the project area) in the upper Nestucca watershed, chosen using a random design. Preliminary results (BLM, 2005) indicate that current sediment levels are substantially below the ODEQ sediment target. The average total percentage of sand and fines in riffles and glides is 8.2%, and the average percent of sand and fines throughout all 3rd and 4th order streams was 9.25%. The results were similar for the Nestucca mainstem.

The results of the relative bed stability analysis, (a monitoring technique developed as part of the EMAP), appears to show that the amount of fines in the upper Nestucca watershed is within the natural range for the watershed. Sediment supply and transport processes appear to be near natural balance. This seems to be in line with what we know about the geology, channel morphology, and past disturbances in the upper watershed.

"The susceptibility of mountain streams to sedimentary cumulative watershed effects (CWEs) increases with decreasing stream gradient and decreasing sediment transport capacity, as these both increase the potential for sediment storage." (Bunte and MacDonald, 1999) An analysis of the upper Nestucca mainstem (from slightly below Bear Creek to slightly below Ginger Creek) shows that the average maximum (or critical) size particle that can be transported at bankflow flow is 6.2 inches in diameter. Project streams are relatively insensitive to sedimentary CWEs because they are efficient at transporting sediment, are generally steep, entrenched, low width-to-depth ratios, low sinuosity, lack floodplains, and have low levels of LWD in channels.

In conclusion, at the Analysis Area scale, cumulative effects of sediment (including connected roadwork actions) would be minimal and indistinguishable from background levels from natural and human-caused sources. Therefore the proposed action would not alter current sediment conditions or adversely effect designated beneficial uses.

### *2.3.4.2 Alternative 2: No Action Alternative*

No forest management activities would occur within the proposed project areas at this time. Forested stands would continue to grow and develop without management intervention, although more slowly. The identified effects of the action alternatives would not occur at this site at this time. There would be no new temporary roads or landings built, nor additional ground disturbance from forest management activities. There would be no direct effects to sediment delivery beyond those already occurring. Existing sources of sediment, both in-channel and out of channel would continue to recover or degrade based on natural or preexisting conditions. There would be an indirect effect of increasing the risk of sediment delivery to streams from road crossings that do not meet applicable BMPs. These sites would continue to pose a risk of sediment delivery to streams until other funding became available to repair them.

Cumulative Effects

The "no action" alternative would result in the continuation of current conditions and trends at this site as described in the Affected Resource section of this report. Hydrologic and water quality effects to the watershed would continue to occur from the development of state, private and other agency lands (primarily timber harvesting and road building).

### *2.3.4.3 Alternative 3*

Effects of implementing this action are similar to those for the Alternative 1 except for the following. Under this Alternative, the three culverts on BLM road 3-7-36.6 would be removed after the timber sale has been completed. It is estimated that removing the culverts would result in additional 3 to 9 cubic yards of fine sediment input to streams. The increased turbidity may deposit fine sediment onto the channel substrate a short distance downstream. Most of the sediment would be flushed out during the following fall and winter high flows.

Cumulative Effects

Cumulative effects of implementing this propose actions are similar to those described in the Alternative 1 proposed action.

#### *2.3.4.4 Alternative 4*

Effects of implementing this propose actions are very similar but slightly different to those for the Alternative 1 proposed action. Under this Alternative the three culverts on BLM road 3-7-36.6 would not be replaced and all the forest stands along the road would be yarded by a helicopter. The physical integrity of the 3 stream crossings would not be altered from current condition. There would be no sediment and turbidity increases that would occur from reinstalling 3 culverts and using the BLM road 3-7-36.6.

Cumulative Effects

Cumulative effects of implementing this propose actions are similar to those for the Alternative 1 proposed action.

### 2.3.5 Invasive, Non-Native Species (Executive Order 13112)

Affected Environment

Existing vegetation consists of a 31-97 year-old conifer over-story, scattered pockets of hardwoods, an under-story of common shrubs and scattered populations of grasses and forbs. A comprehensive native plant species list is located at the Tillamook Resource Area field office. A variety of habitats are represented throughout the project area (substrates, rock, features, elevations, slopes, aspects, water, and topography). Any ground-disturbing activity that occurs within these habitats offers opportunity for the introduction of noxious weeds and/or invasive non-native plant species based on the existence of a seed source. Botanical surveys for Invasive, non-native plant species within the Hoag Pass project area began in June 2004. Where mature native plant communities were established non-native species were non-existent. Species that were identified within the proposed project areas consisted of Bull thistle, (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), Scotch broom (*Cytisus scoparius*), Tansy ragwort (*Senecio jacobaea*), Himalayan blackberry (*Rubus* discolor), and St. Johns-wort (*Hypericum perforatum*). These species were located along road edges and exposed areas that tended to have soil disturbance (i.e. open meadows, riparian areas and motorcycle trails). These species are considered Priority III (established infestations) on the Oregon Department of Agriculture (ODA) Noxious weed list. These aggressive weed species are prevalent throughout Western Oregon and proliferate easily through vectors such as motor or foot traffic, birds, wind, and water. Ground disturbing activities such as new road construction, reconstruction and decommissioning, bank stabilization, yarding corridors, tractor skid trail development, landing use, and haul road maintenance are the most likely activities that could produce conditions conducive to noxious weed establishment. Some degree of noxious/exotic weed introduction or spread is probable as management activities occur in the project areas.

Environmental Effects

#### *2.3.5.1 Alternative 1: Proposed Action*

*Density Management Thinning with Culvert Replacement and Gate Installation.*

Minimal Effect - Priority III noxious weed species found were located along existing roadways. Initial increase in population size and new establishment due to density management thinning activities should be confined to disturbance areas as described above in "affected environment" and would be expected to decrease over time as native species re-vegetate and the recovery of canopy closure occurs. Culvert replacement and bank stabilization would cause ground disturbance that would likely contribute to the further establishment of invasive species. The noxious weed species identified do not tolerate overtopping and can be negatively affected by competition for light. The various design features that are incorporated into this project such as: installing a gate to restrict access to the road and project area, planting native plant species on disturbed sites; blocking access to vehicular traffic on decommissioned roads; and washing equipment prior to entering the project area, would mitigate increases in weed populations. Once the

culverts are replaced, they would provide access to the project area and adjacent timber stands for both immediate and future timber sales.

Cumulative Effects

The analysis area for cumulative effects to noxious/non-native invasive plant species is in the Northern Oregon Coast Range approximately 22 miles south east of the town of Tillamook, Oregon located in the upper reaches of the Nestucca River watershed. Examples of forest management activities within the affected area that will create soil disturbance and influence the spread of noxious/non-native invasive plant species are: commercial and pre-commercial density management thinning, young stand maintenance, new road construction, road decommissioning, road maintenance, culvert replacements, helicopter landing zones, and off highway vehicle (OHV) trails. Activities that do not necessarily create disturbance but influence the spread of weed seeds are recreational hiking, biking, horseback riding, fishing, and hunting. Other sources of seed dispersal are from wildlife that are either passing through or frequent the area, water movement, natural dehiscence and wind. Many past and present management activities tend to open dense forest setting and disturb soils therefore providing opportunities for widespread weed infestations to occur. Many, if not all of the weed species identified as Priority III (established infestations) on the Oregon Department of Agricultures (ODA) noxious weed list are present throughout the area. Because they are present in the project area, seed is readily available for dispersal. Most non-native weed species are not shade tolerant and will not persist in a forest setting as they compete for light when tree canopies close and light to the under-story is reduced.

### *2.3.5.2 Alternative 2: No Action Alternative*

No Effect - Most Priority III species found were located along existing roadways. No appreciable increase in the noxious weed populations identified during the field surveys is expected to occur if no action is taken.

Cumulative Effects

No cumulative affects would occur with a no action alternative.

### *2.3.5.3 Alternative 3*

*Density Management Thinning with Culvert Replacement and Removal.*

Minimal Effect - Initial increase in noxious weed population size and new establishment due to density management thinning activities should be confined to disturbance areas as described above in "affected environment" and in section *2.3.5.1 Alternative 1: Proposed Action*. Culvert replacement and removal would cause ground disturbance that would likely contribute to the further establishment of invasive species. Populations would be expected to decrease over time as native species re-vegetate and the recovery of canopy closure occurs. Removal of culverts at the completion of the project would prevent future passage of motor vehicles along the road thereby reducing the potential for further establishment; however, it is possible that the culverts would have to be replaced for future projects. The various design features that are incorporated into this project such as: planting native plant species on disturbed sites; blocking access to vehicular traffic on decommissioned roads; and washing equipment prior to entering the project area, would all help ensure that there are not any longer term increases in weed populations.

Cumulative Effects

Both alternatives 1 and 3 propose the installation of culverts to allow the use of existing roads for density thinning activities. Cumulative effects for Alternative 3 differ from those listed above for Alternative 1 only in the proposed removal of culverts at the completion of the project. Removal of the culverts would prevent future passage of motor vehicles along the road thereby reducing the potential for further weed establishment; however, it is possible that the culverts would have to be replaced for future projects.

Effects encountered due to density management activities would be the same as those listed above for Alternative 1.

#### *2.3.5.4 Alternative 4*

*Density Management Thinning with Helicopter Logging.*

Minimal Effect - The potential for weed spread in this alternative is less than in alternatives 1 and 3, as fewer roads would be constructed and reconstructed and the culvert project area would not be disturbed. In time, noxious species will return to a lower level of establishment as native vegetation returns.

Cumulative Effects

Alternative 4 would have a minimal negative effect on established native plant populations, in that it would not require new road construction, road decommissioning, or road maintenance. Instead, canopy gaps and associated soil disturbance would be limited to helicopter landing zones and would affect a much smaller cumulative area. Most Priority III species found were located along existing roadways. No appreciable increase in weed populations along those roadways is expected if helicopter logging is employed. Potential dispersal of noxious weed populations due to other management, recreational, and natural vectors would be lower in the absence of yarding corridors and roadside soil disturbance.

### 2.3.6 Soils

Affected Environment

The project area is located in the mountainous, forested highlands of the Oregon Coast Range Province. Elevations range from 1,280 to 2,880 feet. The underlying bedrock geology is Eocene marine basalts and breccia overlain by sedimentary rocks and intrusions of younger volcanic material (diabase). The topography is characterized by rugged low mountains, with heavily dissected steep slopes and short benches. Slopes are typically 10-60%. Debris flow is the dominant erosion process.

Soils series identified in the area are the Caterl, Hemcross, Klistan, Laderly, and Murtip (USDA Natural Resource Conservation Service) and an unnamed soil similar to the Murtip series but formed from sandstone. These soils are classified as Andisols. They are moderately deep to very deep (20 to +60 inches), well-drained and have an udic soil moisture regime (usually moist except for a short period in summer or early fall). Typical soil profiles consist of a duff layer 1 to 4 inches thick, a dark silt loam or loam with few to many gravels topsoil, and a gravelly to very cobbly loam or clay loam subsoil.

The site index, the most common unit of measurement for potential forest productivity, ranges from 109 to 125 on Douglas-fir, 50-year basis (Tillamook USDA-NRCS). These soils have a high ability (i.e., resiliency) to recover from some condition or stress (Meurisse, 1999). As Andisols, they have favorable physical and biological properties such as low bulk density, good tilth, stable aggregation, high OC contents and nitrogen contents. Soil moisture is generally not limiting. Plant competition can be moderate to severe. Project soils have moderate to severe erosion hazards when the soil surface is exposed and they are very susceptible to compaction.

The soil quality, its fitness to function within its surroundings, for the project area is high. Most of the project area show few signs of soil disturbance from past forest management activities. Roads occupy about 1.8% of the 6th field Elk Creek watershed and about 1.8% of the 6th field Testament Creek watershed. Based upon field observations and photo interpretations, skid trails and landings occupy about 5% of the 192 acres proposed for ground-based harvest. The skid trail surfaces are in various stages of healing. The heaviest residual compaction is on mainline trails where subsoil was exposed. These areas dominated by grasses, herbs

and scattered and stunted shrub and tree understory. Little soil disturbance was evident within the proposed cable and helicopter harvest units.

Environmental Effects

For the purposes of this discussion, the "Analysis Area" is defined as all lands within the Density Management Thinning Project Area and road work directly tied it. Effects on soils have been analyzed broadly in the Salem RMP/EIS (Chapter 4, pp. 4-11 to 4-14). The analysis assumes that all of the relevant Best Management Practices outlined in Appendix C-1 in the Salem District ROD/RMP and the design features in Chapter 2 would be implemented and would be effective. Fragile sites not suitable for commercial timber harvest were identified during project planning and were excluded from Project 1 - Density Management Thinning. Approximately 36 acres that would be harvested (mainly by helicopter) are on slopes of 70 to 85%. These areas have deep or moderately deep soils and lack field indicators of slope instability.

#### *2.3.6.1 Alternative 1: Proposed Action*

Soil disturbances due to forest management activities may increase the risks of soil productivity impacts. Soil disturbance does not necessarily result in negative impacts. Soil disturbances from this project that have the highest potential to adversely affect soil quality are: logging, road construction, renovating and/or reconstructing, and burnings. The most vulnerable areas are heavily trafficked areas such as access roads, landings, and main skid trails. Short-term affects are considered to be 10 years or less and long-term affects are considered to be more than 10 years.

Logging

*Ground-based yarding*

Approximately 190 acres would be logged by ground-based systems. Less than 10% of the harvest unit would be in main skid trails and landings. Existing skid trails would be used to the degree practical and count toward the 10% affected area. Based on recent BLM timber sales the most likely ground-based system to be employed is referred to as a mechanized harvest or cut-to-length system. Typically in this system, trees are felled manually or by single or double grip harvester and are yarded with a grapple skidder or forwarder. Compared to a tractor/skidder system, mechanized systems typically result in about 20 to 30% ground disturbance at a lower intensity (e.g., minor mixing and compaction, and little topsoil removal). If a tractor/skidder is used, there would likely be less overall disturbance but slightly more severe disturbance (e.g., subsoil is compacted, topsoil removal). While ground-based equipment would generally operate outside of RRs, a small amount of new disturbance (totaling < 2 acres) would likely result in the outer portions of RRs. The most likely areas include the northwest corner of Unit 4-1, Unit 1-1, Unit 31-1, and Unit 34-2. Most landings would be sub-soiled upon completion of operations.

*Cable yarding*

Cable yarding systems would treat about 490 acres and result in about 13% soil disturbance. Disturbance would generally be light. Heavy soil disturbance (about 5% or 25 acres) would be confined to thin (< 4 feet), discontinuous strips in skyline corridors and landings. About half of the landings would be located outside roadbeds, totaling about 0.5% of the harvest area (3 acres). Landing areas would be sub-soiled to lessen compaction and increase infiltration after they are used.

*Helicopter yarding*

Helicopter yarding would treat about 182 acres and would result in about 4%, mostly light, soil disturbance. Approximately 3 acres of soil would be severely disturbed (severe compaction and high surface displacement) for use as log landings and service area(s). The landings would be built on flat ridgetops, often on existing disturbed sites or at a former rock pit. At least a part of the landings would be rocked if logging operations occur during wet weather. Landing areas would be sub-soiled to lessen compaction and increase infiltration after they are used.

Long-terms effects of forest management activities on soil productivity are difficult to predict. Long-term effects depend upon a number of site-specific factors such as climate, soil properties, and severity and type of disturbance. Due to the lack of long-term data, "Uncertainly about the consequences of soil compaction and other forms of soil disturbance will remain until long-term tree performance is correctly measured over a wide range of regional soils and climatic conditions, and over a long period of time" (Miller & Anderson, 2002). The probability of adverse effects to soil productivity is generally the greatest with high silvicultural intensity conducted on sites with low inherent productivity and stressful climates (Beschta, 1995).

There is growing evidence that site specificity is important in determining site productivity effects. Recent soil disturbance studies (Miller, 1996; Heninger, 2002) measured the effects of soil disturbance in skid trails on conifer growth on areas located on Washington coast and the Oregon Cascades. Treatment areas were clearcut harvested and yarded by tracked and rubber tire skidders in wet, winter time conditions. Douglas-fir seedlings were planted in severely compacted skid trails and on adjacent sites clearcut sites with no soil disturbance (control sites). Results showed that on the Washington coast areas, two years after planting, the height growth of seedlings were slightly reduced compared to logged control sites. By age 10, there was no difference in tree height and volume between the treatment and control sites. In contrast, on the Oregon Cascades sites, after 8-10 years the tree height averaged 28% shorter and the mean tree volume average 29% less than the control sites. Differences in growth rates appear to reflect differences in soil properties and climate. Compared to the Washington coastal sites the Oregon Cascade sites had less favorable soils conditions for growth and root penetration (strongly developed clayey subsoil, less organic matter and nitrogen) and had greater moisture stress during the summer due to climate (xeric, Mediterranean) and soil properties.

In another recent study (Ares, et. al., 2005), researchers found that ground-based harvesting on a coastal Washington site with similar climate (precipitation averaging 89 inches/year, mostly as rain) and soil (Andisols) as the project area altered physical soil properties but had no negative effect on the early growth of planted Douglas-fir.

The proposed action would result in a relatively low overall silvicultural intensity (78% yarded by helicopter or cable; ground-base yarding restricted to the dry season when soils are strong). Project soils have a relatively high inherent soil productivity; resiliency, and quality. The project area has a favorable growing climate (abundant rainfall, mild temperatures).

In summary, the proposed action from logging would result in the slight, short-term decrease in productivity and have no long-term loss in soil productivity.

Roadwork

*Proposed Action*

Constructing 1.4 miles of new temporary roads would displace topsoil and compact subsoil on about 3.4 acres (approximately 0.3% of the harvest area), converting it to non-forest land. All new roads are located outside of Riparian Reserves. Approximately 220 feet of road would have new rock or chipped wood surface and the remaining 1.1 miles would have a natural surface. Most of the roads are to be located on gentle sloping benches and ridgetops. About 500 feet of new road would be built in Section 34 on a strongly (10 to 25%) sloping hillslope. This activity would result in an increase in soil erosion. Most of the erosion would occur in the first fall rains, primarily during the short period before grass becomes established.

Under the proposed action, three culverts on the 3-7-36.6 road would be reinstalled and then left in place for future use. This would result in some minor soil disturbance outside the road prism and a small amount of erosion. The road would be blocked by a new gate. Gating the road should eliminate vehicle use and the potential damage to road surface and reduce soil erosion.

*Connected Action-Road Work (Effects analyzed under previous NEPA documents*
Road work Connected Actions would have a minimal effect on soil productivity since very little disturbance would occur outside of existing roadways. Approximately 9.1 miles of road would be renovated and improved. This action would include roadside brushing, reshaping and restoring the surface where necessary, maintaining or improving drainage structures, applying rock surfacing where needed, and decommissioning. Approximately 40 culverts that are undersized or poor condition would be replaced to better withstand future high-water events. Following timber harvest the Jane Creek Road (3-7-36) would be fully decommissioned. In the short-term, the connected actions would improve drainage and road surface conditions and increase surface erosion. In the long-term, it would decrease surface erosion and lower the risk of culvert or fill failure.

Burnings - Fuel Treatments/Slash Disposal
Soil impacts would be small and be limited to small, scattered, localized areas. Burnings would be confined primarily to areas in and/or along roads, landings, property lines, within *Phellinus weirii* pockets and occur during wet soil conditions when soil resources are less vulnerable to impacts.

Cumulative Effects
The effects from the project action would be local, and there would be no other uses affecting this resource. The proposed logging would add a small net increase in soil compaction and displacement over existing levels. The level would increase from about 5% to less than 10% in proposed ground-base harvest units and up to 5% in proposed cable and helicopter units. Recovery from soil compaction and displacement on these soils is expected to take decades. There would likely be additional gain in compaction if the area is logged within the next 20 to 40 years. However the cumulative effect to soil productivity would likely be minimal due favorable growing conditions and soil properties. Proposed road work including connected actions would reduce the BLM mileage within the watershed by 3.9 miles thereby improving soil productivity in the long-term.

### *2.3.6.2 Alternative 2: No Action Alternative*
Under the no action alternative there would be no short-term effects on the soil resource over and above the existing condition. No additional logging, road construction, renovating and/or reconstructing, and burnings would disrupt the natural soil processes. Existing roads that were either surfaced by rock or lacking topsoil would remain as non-forest land for the foreseeable future. Areas impacted from past timber management practices and natural disturbances would continue to recover until another major disturbance (e.g. fire or a windstorm) occurs and the recovery process begins again.

Cumulative Effects
The no action alternative would result in the continuation of current conditions and trends in the project area as described in the Affected Resource section of this report.

#### *2.3.6.3 Alternative 3*
Effects of implementing Alternative 3 are very similar to those for Alternative 1 – the proposed action. The exception is that under Alternative 3 the three culverts on BLM road 3-7-36.6 would be removed after the timber sale has been completed.

The removal of the 3 culverts would have minor effect on the soil resources (a slight increase in soil erosion) because nearly all of the new ground disturbance would occur on existing road prisms.

Cumulative Effects
Cumulative effects of implementing this alternative is similar to those described in the Alternative 1 proposed action.

#### *2.3.6.4 Alternative 4*
Effects of implementing Alternative 4 are very similar but slightly different to those for Alternative 1, the proposed action. Under this alternative the three culverts on BLM road 3-7-36.6 would not be replaced and all the forest stands along the road would be yarded by a helicopter. Helicopter logging all the forest stands along the 3-7-36.6 road would result in less soil disturbance. Eliminating the use of timber hauling on the 3-7-36.6 road and not reinstalling the three culverts would reduce some minor soil erosion that would otherwise have occurred under Alternative 1.

Cumulative Effects
Cumulative effects of implementing this alternative is similar to those described in the Alternative 1 proposed action of this report.

### 2.3.7 Special Status and SEIS Special Attention Wildlife Species and Habitat

Affected Environment

The proposed density management project would treat approximately 862 acres of forested stands within the AMR LUA - AMR lands are located in both the Late Successional Reserve and Adaptive Management Area LUA's. Approximately 226 of the acres proposed for treatment are also within the Riparian Reserve LUA.

The affected environment of the stands in the analysis area is the same as described in the Forest Vegetation section of the analysis (2.3.1).

The following discussions apply to those Special Status and SEIS Special Attention Wildlife species for which there have been identified impacts associated with the implementation of the Hoag pass Project. For a complete discussion and documentation of unaffected SSS wildlife species within the project area, see Project Record Document 46- Wildlife Biological Evaluation.

Mollusks - BS (Bureau Sensitive) and/or Survey and Manage
There are currently seven species of mollusks identified as Bureau Sensitive on the Bureau's Manual 6840 Special Status Species List with the potential of being located within the proposed treatment units and/or in the general sale area. These include the Crowned Tightcoil (*Pristiloma pilsbryi*), Evening Fieldslug (*Deroceras hesperium*), Pacific Walker (*Pomatiopsis californica*), Puget Oregonian (*Cryptomastix devia*), Salamander Slug *(Gliabates oregonius*), Spotted Tail Dropper (*Prophysaon vanattae pardalis*) Tillamook Westernslug (*Hesperarion mariae*). Two of these species, the Evening Fieldslug and Puget Oregonian are also Survey and Manage species. In general, all of these species are associated with the organic duff layer on the forest floor as well as with habitat types containing sword ferns and a hardwood component, especially big-leafed maple. Additional habitat features utilized by some of these species also include, uncompacted, cool, moist soils; hardwood leaf litter; abundant later-decay-class large and small woody debris; and mosses growing on the trunks of big-leaf maples.

*Mollusk Surveys*
A total of approximately 1,195 acres were surveyed for mollusks in conjunction with the Hoag Pass density management project in the fall of 2004 and spring of 2005 (see project record documents #5, 6 and 42). Mollusk surveys for the Hoag Pass Project were conducted in and near all of the proposed density management units, as well as in other areas which are currently not proposed for density management treatments. *"Survey*

*Protocol for Survey and Manage Terrestrial Mollusk Species from the Northwest Forest Plan*" (Version 3.0, 2003) was followed for all surveys. These surveys resulted in two target species being located - the Tillamook Westernslug (*Hesperarian mariae*) at 82 different sites, and the Crowned Tightcoil (*Pristiloma pilsbryi)* at four different sites; both of these species are identified as Bureau Sensitive – there were no Survey & Manage species identified. Many of these identified sites were located in proposed treatment units while others were located within adjacent stands.

Columbia Torrent Salamander - (BS) Bureau Sensitive
The Columbia torrent salamander is strongly associated with the splash zone directly adjacent to permanently flowing streams and seeps. Relative to the density management project, suitable habitat for this species is located entirely within the no-harvest buffers of the riparian reserves that are situated adjacent to the proposed treatment units. Although the limited survey efforts for this species failed to confirm the occurrence of this species within the area, they are assumed to be present where suitable habitat is present.

Harlequin Duck - (BA) Bureau Assessment
The harlequin duck breeds along rocky, swift flowing rivers from the Rocky Mountains to the Coast Range of Oregon. Harlequins spend much of their time in riffles and glides except when rearing very young ducklings, when they often spend time in the slower pool water. The female is the only brooding parent with the male leaving for the coast soon after nest initiation. The female begins moving the young down river within a few weeks after hatching in late May to mid June. It is estimated that by late August the female and the brood are in the vicinity of the estuary.

The harlequin duck was not known to recently breed in the Oregon Coast Range until a female with young was identified in the Nestucca River in July of 1994. Since then, there has been documented breeding behavior (females with young) during several breeding seasons; these observations have occurred within the mainstem of the Nestucca River up to approximately the Fan Creek confluence, a point well within the project Analysis Area.

Northern Goshawk - (BS)
Goshawks use a variety of forest types and structural stages as foraging areas but in the west, tend to nest in mature conifer habitats with a relatively dense canopy cover. They tend to build relatively large nests that can be used by the original pair or successors for many years.

Breeding goshawks are quite rare in the Oregon Coast Range with less than five records, but they do use Coast Range habitat more frequently during migration. The nearest known breeding sites are in the central Coast Range south of the project area in the Yachats and Siuslaw river drainages, and a newly discovered nest site (2004) on ODF land in the Salmonberry River drainage approximately 25 miles NNW of the project area. With known breeding sites north and south of the project area, it is not unreasonable to expect that there could be breeding goshawk sites closer to the project area where good habitat exists.

Suitable goshawk foraging and/or nesting habitat exists within the Analysis Area including the proposed density management treatment units. Although goshawks or goshawk nests have not been observed in the vicinity of the project area, migrating or dispersing birds could periodically use forested stands within and near the proposed treatment units.

NWFP Bats
The NWFP and Salem District RMP identify five species of bats that would benefit from additional habitat protection. Four of these five species have potential of being located within or near the proposed action areas. These species include the fringed myotis, long-eared myotis, long-legged myotis, and the silver-haired bat. All of these bat species are known to inhabit mature and immature coniferous forest and may forage near riparian areas, open areas, and along forest edges while utilizing large hollow trees for roosting, hibernating, and maternity colonies.

There are no known bat roosting or hibernaculum sites within the project area. Surveys for these species are required under the NWFP and RMP if caves, mines, or abandoned wooded bridges and buildings are within or near the project area. There are none of these habitat types or structures within or near the project area therefore no bat surveys are required; no bat surveys are scheduled to be conducted within or near the Hoag Pass project area.

Townsend's Big-Eared Bat - (BS)
In addition to the bat species identified within the NWFP, one species of bat, Townsend's big-eared bat, is covered by the Bureau's Special Status Species Policy. Townsend's big-eared bats are seldom abundant but are known to occupy a variety of habitats. In western Oregon, these bats are associated with coniferous forests, but they are also considered characteristic dwellers of caves, abandoned mines, and buildings. No caves, abandoned mines or buildings are known to be located within the vicinity of the proposed action. Some of the more open forested and riparian habitats within and near the proposed treatment units could function as foraging habitat and it is possible although rather unlikely that this species of bat could be encountered within or near the proposed project area.

Red Tree Vole - (BS and Survey and Manage)
The red tree vole is generally associated with mature or old-growth conifer or mixed hardwood-conifer forests. The tall, multi-layered canopies of mature or old-growth forests retain humidity and intercept fog, which functions as a climatic buffer and a source of free water. Large branches of mature and old-growth trees provide stable support for nests, protection from storms and travel routes. Although red tree voles have been located within younger stands, especially if they are contain a component of larger remnant trees, mature and old-growth stands are thought to be their optimal habitat. Potential habitat for the red tree vole is located within and near some of the proposed density management project areas.

*Surveys*
A total of approximately 821 acres were surveyed for red tree voles in conjunction with the Hoag Pass project (see project record document #18). All of the proposed density management treatment units that triggered protocol were surveyed for red tree voles. Often the individual areas surveyed were somewhat larger than proposed Density Management treatment units. Surveys were conducted in February 2005 with additional 100-meter searches and/or climbing conducted in February 2006; *Survey Protocol for the Red Tree Vole* (Version 2.1) was followed for all surveys. These surveys resulted in one active red tree vole nest being located as well as 10 inactive tree vole nests. The single identified active tree vole nest is located across a small drainage and approximately 600 to 700 feet from a density management treatment unit in an area not proposed for treatment. The majority of the inactive tree vole nests were also located outside of the density management treatments or on the edge of a proposed treatment unit.

Roosevelt Elk and Black-Tailed Deer
Roosevelt elk and black-tailed deer use a wide range of habitat types. The use of the proposed project areas by these species is considered moderate and the quality of the habitat for these species in the project area is considered to be good. This is based on the fact that generally, areas affording hiding cover are adjacent to, and interspersed with, areas containing adequate forage and/or browse.

Higher densities of roads and trails that are open to vehicular traffic within an area can negatively influence habitat utilization and increase elk and deer vulnerability. The Final EIS to the Salem District RMP identifies a general target for roads open to motorized use as 1.5 miles of road per square mile. Looking at all system roads within BLM's GIS database, recognizing that a portion of these roads have been blocked or for various reasons are not drivable, road densities for the sub-watersheds within the Nestucca Watershed vary from a low of 3.7 $mi/mi^2$ a high of 5.8 $mi/mi^2$; the Upper Nestucca/Elk Creek sub-watershed, which contains the proposed project area, contains 5.3 $mi/mi^2$ – along with to a portion of the Upper Nestucca OHV trail riding area. This relatively high density of roads within some portions of the project area may limit the relative habitat quality of the area,

especially for Roosevelt elk. These roads however, are not evenly distributed throughout the sub-watershed; a block of contiguous mature forest within the Analysis Area approximately 1,400 acres in size represents the largest relatively contiguous block of mature forest habitat on BLM land within the Tillamook Resource Area; this block of mature forest has a very low relative road density, especially currently open, drivable roads.

Environmental Effects

### *2.3.7.1 Alternative 1: Proposed Action*

Implementation of Alternative 1 of the Hoag Pass Density Management Project would not be expected to: (1) result in the loss of population viability for any Special Status Species that may occur in the project area, or result in the need to elevate their status to any higher level of concern including the need to list under the ESA; or (2) result in any identified cumulative impacts to SSS wildlife resources associated with Alternative 1. This is primarily a result of the nature and scope of the proposed project (include incorporated design features to minimize the potential for adverse impacts) as well as the nature of the habitats impacted.

Mollusks- BS (Bureau Sensitive) and/or Survey and Manage

There are currently seven species of mollusks identified as Bureau Sensitive or Assessment Species on the Bureau's Manual 6840 Special Status Species List with the potential of being located within the proposed treatment units and/or in the general sale area; two of these species are also Survey and Manage species. A total of approximately 1195 acres were surveyed for mollusks in conjunction with the Hoag Pass Density Management project in the fall of 2004 and spring of 2005 (see project record documents #5, 6 and 42). Surveys resulted in two target species being located - the Tillamook Westernslug (*Hesperarian mariae*) at 82 different sites, and the Crowned Tightcoil (*Pristiloma pilsbryi)* at 4 different sites; both of these species are identified as Bureau Sensitive – there were no Survey & Manage species identified..

There are several project design features incorporated in the EA which would help reduce the potential for short and longer term adverse impacts to mollusks species and/or their habitats. Some of these design features are reserving the majority of the existing hardwoods, where appropriate, incorporating red alder and/or bigleaf maple into reforestation plantings, protecting and reserving existing CWD, minimizing disturbance to the existing organic duff layer by designating skid trails, limiting road construction, minimizing the use of fire, and maintaining a post-harvest canopy closure which averages approximately 50 to 60%.

The proposed action is expected to result in an increased amount of alder growing within portions of the treatment units which would be expected to result in some benefit to the quality of future mollusk habitat within the treated stands.

Columbia Torrent Salamander - (BS)

The Columbia torrent salamander is directly associated with the splash zone of permanently flowing streams and seeps. Suitable habitat for this species is located within the riparian reserves within and adjacent to the proposed units; they are assumed to be present.

In general, the "no-harvest" riparian buffers would provide adequate protection to any Columbia torrent salamanders and torrent salamander habitat within the area; no timber harvest would occur within the Riparian Reserves along the mainstem of the Nestucca River, no-cut buffers along fish-bearing streams are generally at least 100 feet and 50 feet along non-fish-bearing streams. The limited number of yarding corridors needing to be created through the riparian areas would not be expected to appreciably reduce the quality of the habitat within these areas especially given the fact that full suspension would be required across the creeks and all trees needing to be cut within these buffers would be retained on site as CWD.

Harlequin Duck - (BA) Bureau Assessment
The proposed density management project is not expected to affect harlequin ducks to a great degree. Impacts to the harlequin habitat are expected to be negligible based upon the general nature of the density management project including design features such as not entering the Riparian Reserve associated with the mainstem of the Nestucca River (at least 400 feet wide), the maintenance of no-harvest riparian buffers along all other streams, and the protection of existing CWD. These measures would also help reduce the potential for disturbance within much of the areas potentially inhabited by harlequins.

Depending upon when the project is implemented, it is possible that breeding ducks could be in the area while the project is being implemented. They would likely be most vulnerable during the period of nest incubation, since the ducks are highly mobile they would be able to avoid disturbance simply by moving away from the site during other phases of the breeding season. The fact that the ducks, after the hatching of the clutch, use most of the river for foraging while en route to the sea indicates that they are likely not dependant on any particular reach of the river for survival during this phase.

Northern Goshawk - (BS)
The proposed action is expected to have no, or a negligible short-term impact upon goshawks and goshawk habitat. This is based upon the low likelihood of goshawks currently utilizing the area and nature of the proposed density management treatment. Project design features such as the maintenance of the "no-harvest buffers" within the riparian reserves, the light nature of most of the proposed thinning prescriptions, and the dispersed nature of the treatment units would all serve to minimize or mitigate adverse impacts upon goshawks and goshawk habitat. The density management treatments would be expected to result in long-term benefits to goshawk habitat by maintaining or increasing the growth rates of reserve trees, and promoting the development of snags and more complex stand structures thus aiding the development of some late-seral stage habitat features.

Due to their rarity within the coast range of northern Oregon it is not expected that goshawks would be nesting in the project area, but without conducting extensive surveys it is impossible to rule out. Timber sale contract stipulations would protect any newly discovered nesting raptors including goshawks.

Bats (including NWFP bats and the Townsend's Big-Eared Bat)
There are no known bat roosting or hibernaculum sites within the project area.

Bats are known to forage near riparian areas, open areas, and along forest edges. The Hoag Pass project would be expected to immediately improve the quality of bat foraging habitat within some portions of the density management units by opening up the canopy and creating small fragmented gaps in an otherwise closed canopy. The project's design features for CWD, snag and green tree protection and retention, including those trees with features desirable to species such as bats, should provide adequate structure for roosting or resting bats and greatly reduce any short- and/or long-term adverse impacts to bats which may result from the proposed project. Within the units proposed for thinning, there is potential for long-term benefits to bats based upon the fact that the treatment would favor the development of some older forest characteristics favored by these species.

Red Tree Vole - (BS and Survey and Manage)
The red tree vole is generally associated with mature conifer or mixed hardwood-conifer forests; a portion of the proposed density management project areas currently contain habitat for the red tree vole.

*Impacts to Habitat*
Density management thinning harvest is likely to degrade the suitability of some of the treated stands in the short-term (less than 20 years) by temporarily removing adjoining tree crowns, but suitability is expected to be enhanced in the long-term (20 years or more). The reserve trees are expected to begin to respond to the thinning with an accelerated growth rate and increased crown development within a few years after the

harvest. This would result in the long-term expected impacts of a higher quality of vole habitat within the treatment units sooner than would be expected to develop without treatment.

Mitigation measures are included to reduce the potential for adverse impacts. Treatments are expected to maintain a post-harvest average canopy closure of greater than 60% in stands generally 80-years-old or older and in stands that have trees greater than or equal to 18 inches average DBH. A canopy closure of greater than 40% would be maintained in younger stands or stands with a smaller average DBH. Trees generally favored for retention would be the largest within the stand. Furthermore, the marking prescription for the density management project would include stipulations to protect any tree that contains a suspected nest of any bird or mammal and any tree adjacent to any trees containing a suspected nest. Those trees infested with mistletoe would not be targeted for removal.

Roosevelt Elk and Black-Tailed Deer

It is expected that the Hoag Pass Density Management project would temporarily displace individual deer and elk as they react to the disturbance created by project implementation and the increased human presence within the vicinity of the treatment units. This would not impact the health of the populations based upon the expected limited length of time of the disturbance and the fact that other, relatively undisturbed suitable habitat is present within the vicinity of the proposed action.

Overall, the basic configurations of the density management units, which are interspersed with denser areas of cover not proposed for thinning, are expected to result in an improvement in the general habitat quality available for elk and deer. Within the treatment units, the vigor of the herb and shrub understory layers would be greatly increased thereby improving the quality of available browse and/or forage. Additional design features contributing to the overall improvement of habitat and/or the minimization of negative impacts include the light nature of the proposed treatments, minimization of road construction and the proposal to obliterate many of the roads accessing the units at the completion of the harvest. The combination of the proposed action and connected actions associated with implementation would result in a net decrease of approximately 4 miles of roads within the Analysis Area.

Although the proposed treatments could have a slight, adverse short-term impact upon escape and/or thermal cover for big game in portions of the thinned units, other suitable thermal and/or escape cover exists within the general area. These areas include stands within Riparian Reserve no-harvest buffers and in the other intermingled areas not proposed for treatment. Thermal cover is probably less important or limiting within the Coast Range of northern Oregon than in other portions of these species' range, due to the relatively mild winters and summers within the region. However, areas which are thinned would continue to function, in some regard as cover for big game; thinned stands should still serve to help moderate temperature and wind extremes, as well as in some regard, serve as a visual buffer.

### *2.3.7.2 Alternative 2: No Action Alternative*

Under the no action alternative, no forest management activities would occur within the 862 acres of proposed project areas at this time; natural processes would continue and the forested stands would continue to grow and develop without management intervention. The identified impacts of the action alternative would not occur at this site at this time.

Under the no action alternative, the density management treatment of approximately 226 acres of densely stocked forest within the Riparian Reserve allocation as proposed under the Alternative 1 would not occur. No existing roads would be decommissioned. The expected benefits from density management treatment and road decommissioning to attaining the ACS objectives and the development of some features of late-seral stage habitat would be expected to occur in a slower time frame than with the implementation of the action alternative as the untreated stands continue to develop naturally. Additional discussion and data of the expected impacts of the "No Action" alternative upon the forest's development is located within the *Silvicultural Prescription for the Hoag Pass Density Management Project* (Project Record Document #44).

Cumulative Effects
There are no identified cumulative impacts to wildlife associated with the No Action Alternative.

#### *2.3.7.3 Alternative 3*
Under Alternative 3 to the Hoag Pass Density Management project all project design features are identical to Alternative 1 except the density management project includes (re)placing the 3 culverts on BLM road 3-7-36.6 and then removing them at the end of the timber sale contract.

Selection of Alternative 3 would result in similar impacts to wildlife resources as described for Alternative 1 (2.3.7.1). As with Alternative 1, post-harvest BLM road 3-7-36.6 would not be open for vehicular traffic and therefore not contribute to an increased level of potential disturbance and the identified impacts to habitat features would be expected to be of a similar nature.

Cumulative Effects
Alternative 3 would not result in any identified cumulative impacts to Special Status Species.

#### *2.3.7.4 Alternative 4*
Under Alternative 4 to the Hoag Pass Density Management project all project design features are identical to Alternative 1 except the density management project does not include (re)placing the culverts on BLM road 3-7-36.6 but rather thinning all the stands along the road with a helicopter.

Selection of Alternative 4 would generally result in similar impacts to wildlife resources as described for Alternative 1 (2.3.7.1). As with Alternative 1, post-harvest BLM road 3-7-36.6 would not be open for vehicular traffic and therefore not contribute to an increased level of potential disturbance. Because treatment units would be thinned with a helicopter rather than more conventional ground- or cable-based logging systems there would be no logging corridors constructed; this would result in a slightly different configuration of the reserve trees and the post-harvest stand may be slightly denser. With no corridors being created, there would likely be fewer reserve trees needing to be cut and therefore reserved as down logs. Helicopter yarding would also be expected to result in less logging damage to the crowns and boles of the reserve trees.

Cumulative Effects
Alternative 4 would not result in any identified cumulative impacts to Special Status Species.

### 2.3.8 Fish Species with Bureau Status and Essential Fish Habitat

Affected Environment

The proposed action would primarily occur within two 5$^{th}$ field watersheds.

*Yamhill*
Three fish species are potentially located within the Willamina Creek subwatershed that have Bureau Status. These include coho (a MSA species), Upper Willamette steelhead (an ESA threatened species with no designated critical habitat within this subwatershed) and Upper Willamette chinook. Upper Willamette chinook is an ESA threatened species and an MSA species, however they are not known to occur in the Willamina Creek subwatershed.

*Nestucca*
Some of the species of interest include Pacific and River lamprey and Oregon Coast cutthroat trout which are Bureau Tracking species. Other Special Status Species within the Nestucca include Oregon Coast steelhead, a Federal candidate species for listing under the Endangered Species Act, and Oregon Coast coho salmon. The status of coho salmon within the Nestucca changed from proposed (threatened) under the Endangered Species Act to Bureau Sensitive. Oregon Coast chinook salmon and Oregon Coast coho salmon are included in the Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) provisions. All of these species are known to occur in all or portions of these watersheds. The Nestucca Tier 1 Key Watershed includes all of the thinning treatments in the project area.

Cutthroat trout have the greatest distribution of any species within the project area. They are often found in second order tributaries, and many populations are isolated above barriers to anadromous salmonids. Chinook salmon have the least extensive distribution, being mainly restricted to the lower portions of the larger streams. Steelhead, coho salmon and Pacific lamprey tend to occupy habitat lower in the stream system than the upper extent of cutthroat trout distribution. All of these species have similar habitat requirements for spawning (cool water, gravel substrates) and any changes to these habitat elements may affect spawning or rearing success. The life history of these species is quite variable; chinook salmon spend very limited time in the watersheds while cutthroat trout may spend their entire life there. Pacific lamprey differ from the salmonids in that they have the longest juvenile stage (4-6 years) and rear in sediment rich portions of the streams. River lamprey, a Bureau Tracking species, may be present but their distribution is not known.

Fish distribution surveys have been completed for all of the streams that originate within the project area. Fish distribution is outside the project areas for all units. The closest unit to fish (cutthroat trout) is at least 180 feet. None of the density management units are within the Riparian Reserve adjacent to anadromous fish distribution.

Detailed spawning and rearing data is available for coho, chinook and steelhead as is ODFW's Aquatic Inventory (Habitat Inventory) for the project area. Data is more limited for the other fish species within the project area. Figure 6 depicts the anadromous and resident fish distribution known within the project area in the Nestucca Watershed.

The hauling to and from these sale units (i.e. rock in, logs out) would occur in the Yamhill and Nestucca Watersheds. There is limited potential for haul in other watersheds. Haul routes to be used include Fan Creek Road, Dover Peak Road, Hoag Pass Road, Jane Creek Road, the Nestucca Access Road and Bald Mountain Road.

The majority of actions fall within the Elk Creek 6th field Watershed with the exception of approximately 30 acres of density management thinning located in the headwaters of the Testament Creek 6th field Watershed. The data contained in the paragraph below describes the major elements of fish habitat and the current condition within the analysis area.

Analysis of Oregon Department of Fish and Wildlife (ODFW) data (aquatic inventory) for the analysis area, which is three reaches of the Nestucca River between Elk Creek and Bald Mountain Fork will be used to describe the baseline condition of this habitat. These three reaches cover 6.8 miles of habitat.

This portion of the Nestucca River has an active channel width that averages 20 meters with a width to depth ratio of 42. The width to depth ratio is calculated from the average width of the channel by the average depth of the water (ODFW standards set 15 or less as "desirable" and >30 as "undesirable"). The percentage of pool area and the number of channel widths between pools are both good with 55% of the total area in pools (>35% standard) and only 1.3 channel widths between pools (5-8 standard). The Nestucca River in these reaches rates very well in both of these indicators.

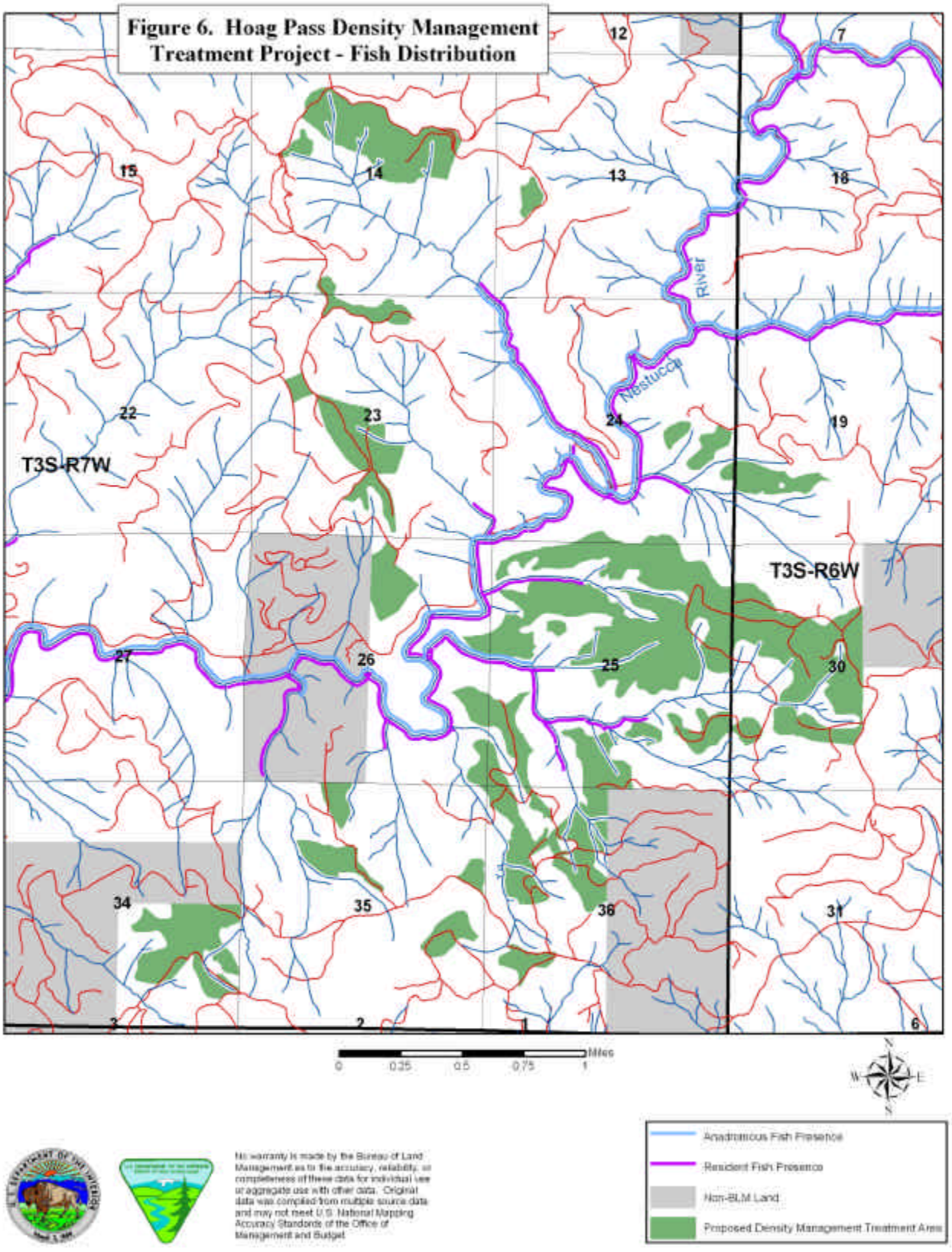


Figure 6. Hoag Pass Density Management Treatment Project - Fish Distribution
12
7
15
14
13
18
Nestucca River
22
23
24
19
T3S-R7W
T3S-R6W
27
26
25
30
34
35
36
31
3
2
1
6
Miles
0
0.25
0.5
0.75
1
N
W
E
S
Anadromous Fish Presence
Resident Fish Presence
Non-BLM Land
Proposed Density Management Treatment Area
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data was compiled from multiple source data and may not meet U.S. National Mapping Accuracy Standards of the Office of Management and Budget

This page intentionally left blank

The desirable standard for large woody debris (LWD) also known as Key pieces (24"x 50' in length) is 49 pieces per mile; the estimated number in this section of stream currently is 14 per mile, well below the desirable standard.

Substrate within this segment of the Nestucca has been sampled by two methods, visual estimation (ODFW aquatic inventory) and an EPA sampling technique. Substrate and more specifically the amounts of fine sediments (sand and smaller) is used as an indicator for habitat quality; the desired range of fine sediments is less than 8%. Analysis of ODFW data for riffle habitats within this reach denoted 9.3% of the substrate was sand or silt. The detailed data gathered using EPA methodology on 12 sites within this reach for sand and silt had a mean value of 8.9%. In addition this data set allows calculation of the size of particle transport probable during a bankfull event. Within this portion of the Nestucca, bed load transport analysis predicted sediment, up to a mean of 157mm (6.2"), moves annually when bankfull flows are reached. These two survey methods both indicate that fine substrate is at or near the desirable range (>15% is considered "undesirable" by ODFW) for salmonid spawning and rearing.

The current conditions within this portion of the Upper Nestucca are a result of both historic actions and events along with recent projects designed to improve habitat conditions. This combination of historic and current actions and events set the stage for the current observed baseline conditions and provide a context to measure cumulative effects. Historic events that have set most of the stage for the current conditions for fisheries resources in the Nestucca River (in order of most to least change) include the flood caused by failure of the Meadow Lake Dam, the construction and reconstruction of the Nestucca Access Road (and other road systems), stream cleaning, timber harvest and broadcast burning. Most of the events that directly influenced the Nestucca River resulted in increased sediment transport, simplification of the stream channel, and loss of large woody debris.

Since the early 1980's instream restoration projects, culvert replacement projects and road stabilization/decommissioning within the Upper Nestucca Watershed have been designed and implemented to increase the retention of spawning gravels and provide refuge habitat for rearing juvenile coho, provide additional access to previously limited habitat and reduce road density. BLM timber harvest projects within the Upper Nestucca, recent (1994 – present) and future (present – 2011) have had and will have both beneficial and adverse impacts to Large Wood Debris (LWD) recruitment to the Upper Nestucca River. Timber haul from state or private timber harvest within the Upper Nestucca, some of which occurs within the wet season, is estimated at 3 million board feet annually and some portion of this may occur within the project area. Discussion of potential affects to fisheries resources from haul will be discussed in the environmental effects portion of this document.

Approximately 3% of the proposed action area is located within the Testament Creek sixth field watershed. A detailed analysis of the habitat indicators within this sixth field was not conducted as potential impacts to water quality or fisheries are not anticipated.

Environmental Effects

### *2.3.8.1 Alternative 1: Proposed Action*

Habitat Impacts

There is a low probability of increased sediment delivery into streams from timber harvest conducted by either helicopter, ground-based or cable yarding methods. Road construction/decommissioning and hauling are anticipated to introduce small amounts of sediment into streams. Road densities would increase in the short term. In the long-term, the net road density would decrease as a result of this action and connected actions. There would be some new activities such as road and landing construction that would occur on previously undisturbed ground.

Density management that occurs during the wet season (generally October 16 – May 31), would use specific road segments that have been identified for wet season haul including the upper end of Hoag Pass Road, Nestucca Access Road (paved portion), Bald Mountain Road and Jane Creek Road. All of these extended season routes are either ridge top or are paved. These road segments were chosen because they have the least potential of delivering road related sediment. By specifying haul routes, increasing maintenance and to a large degree using ridge top roads this project would minimize sediment inputs during the time of year when sediment has the greatest potential to enter streams. Haul during the wet season has a greater potential of increasing the input of fine sediments but should not amount to any measurable change to any streams physical habitat features needed to support fish at the 6th field watershed scale. The input of sediment from haul with a resultant increase in turbidity is anticipated below stream crossings, however these pulses of sediment are anticipated to be small and in most cases cause no adverse impacts to fish or their habitat.

The potential for impacts to fish species is anticipated to be low from the harvest of timber with a helicopter as soil disturbance is not likely. The other harvest methods, cable and ground based, have design features which limit potential impacts to water quality. See water quality section 2.3.4.1.
The potential input of sediment from activities, such as yarding, hauling or culvert replacements will be discussed further. Other indirect affects such as the loss of LWD is anticipated with this action and road density would be affected in the short and long term. Other habitat elements such as stream shade (surrogate for temperature), peak and base flows, drainage network, access to habitat, the percentage area in pools, pool quality, off channel habitat, stream bank condition, refugia and flood plain connectivity are not predicted to change by the implementation of this proposed action.

*Sediment analysis*
Hauling from harvest units would occur within the Nestucca and Yamhill Watersheds on gravel and paved roads generally well above habitat occupied by any fish species. The use of roads for timber haul could produce a small, short-term increase in sedimentation and turbidity into local streams. The haul routes have been evaluated by direct observation and the transmission of road related sediment is anticipated to be negligible. Most fine sediments generated that are delivered to these small tributary streams are likely to travel short distances before being trapped. During periodic, high flow events, some of the sediment trapped in these channels would move downstream into larger perennial streams as suspended sediment (Duncan, *et al*, 1987). Specific data on the size of streams, distance to major channels and MSA listed or selected Special Status Species is included as "Haul route and culvert crossing table (Project Record Document # 50). None of the sediment or resultant turbidity generated by haul or yarding within units is anticipated to be measurable or detectable when it is moving into the proximity of habitat for MSA or SSS.

The potential of impacts from timber hauling to MSA or SSS from sediment would be minimal. The following rationale explains this reasoning:

1. The road system is designed for all season-use
2. Haul would only occur during the period when the roads would be in the best condition to haul without producing excessive sediment, primarily dry season.
3. Total production of fine sediments should be low as roads would be maintained prior to and during periods of haul.
4. Most of the stream channels are lower order and most likely dry or have very low volume during the period of haul. Therefore, any road related sediment that enters these stream channels should be stored during the period of haul. The portions of these road systems to be used in an extended season are primarily ridge top or are paved. As the majority of haul routes are planned for dry season haul only, the temporal scale of potential sediment inputs related to dry season haul is limited.

5. The suspended sediment portion that moves out of stream channels along dry season haul routes should move with the first major storm events when background turbidity levels are higher and prior to the arrival of adults for spawning. As such there should be no functional change to spawning gravels.

Since suspended sediment is not the main component found to infiltrate spawning substrate, its movement through the portions of the Nestucca River which provide spawning and rearing habitat for coho, steelhead, chinook or other fish should not have impacts to spawning habitat. (Lisle et al., 1989). Data collected using EPA methodology indicates that substrate up to 157 mm (>6 inches) moves annually when the Nestucca River reaches bankfull stage. With this information it can be assumed that the minor input of fine sediment would not alter the substrate composition in the mainstem Nestucca River (Essential Fish Habitat).

The majority of helicopter landings are located on ridge tops far from water courses; as such the potential for direct impacts is negligible. The location of one specific landing located in an abandoned quarry adjacent to the Nestucca does have the potential of direct impacts to fisheries resources. As a large portion of the helicopter-yarded timber may be flown to this location, there would be increased traffic on the site. As the surface of this quarry site is comprised of the waste rock from prior crushing operations, increased rock wear is anticipated in direct proportion to the amount of use. To address this potential source of sediments to the Nestucca, a sediment control plan is being developed. Measures within this plan including the addition of durable rock, use of geotextile fabric and the use of a sediment trap or filter system. The implementation of these measures is anticipated to result in notably less sediment leaving this site than is currently generated, i.e. the background condition. This sediment control plan would have beneficial effects to fish species within the Nestucca Watershed by reducing the current sediment inputs from this location.

*Large Woody Debris*

Large wood is an important element to both create and maintain fish habitat. Large Woody Debris would be both removed (timber harvest) and added (LWD creation in all stands >18" QMD or older than 80 years of age) as a part of this proposed action. There is no potential for affects to fish habitat due to the spatial distribution of the harvest units within this project area. While there are approximately 226 acres of RR thinning none of the thinning is proposed adjacent to coho, steelhead or chinook occupied streams. The only units that are proposed to be taken below a Relative Density Index (RDI) of 0.3 are very young (32 years old) and all but one (at ~1/2 mile) are located approximately a mile from coho and steelhead habitat. All treatments within the RR land use allocation would only involve thinning. The use of no harvest buffers of 50 feet on non-fish-bearing streams and 100 feet on fish-bearing streams lowers the potential of impacts to current or future LWD recruitment. For most of the RR treatment areas a higher RDI is part of the prescription and most LWD recruited to stream channels come from within 50 feet or unstable areas that were withdrawn from potential harvest. In addition, in 27 of the 39 treatment units additional LWD averaging 1070 cu ft per acre would be created (primarily in the form of snags) to meet the mid point of the LSRA target volume. Additionally, in all stands classified as suitable northern spotted owl habitat, at least one or more trees per acre would be felled, girdled or topped for coarse woody debris. "Coarse woody debris creation would be proportionally higher in Riparian Reserves than uplands to better meet in-stream wood recruitment needs."(Silv RX, Project Record #44, pg 18). This project is anticipated to have a negligible potential of affecting LWD recruitment to streams from timber harvest due to the distance to fish habitat, small stream channels and use of no harvest buffers and harvest of the smaller trees within each unit. In older stands a short term increase in LWD is anticipated in RR. In upland areas there would be a short term increase in coarse woody debris. Both the LWD increases and CWD increases are beneficial effects.

*Road Density*

Road density is anticipated to temporarily increase slightly with the implementation of this action. Current road density within this watershed exceeds a standard set by NOAA of 3mi/sq mile and as such is considered not properly functioning. Road density recently has been decreasing due to active decommissioning and implementation of a large scale road decommissioning/ stabilization project. A

discussion of the recent decreases in road density is included in the hydrology / water quality portion of this document. When this project is complete, road density would decrease by a small amount, a beneficial effect in the long term.

Functional changes in spawning or rearing habitat for MSA or SSS fish are not anticipated in the Nestucca or Yamhill Watersheds.

Fisheries Impacts

Cutthroat trout have the greatest potential of impacts from road related sediment. Any possible impacts are predicted to be well below any lethal threshold. However, the potential for some behavioral changes such as avoidance, suspension of feeding, loss of territoriality is greater due to their proximity to the project area. There are several locations where gravel roads cross larger order streams with known or predicted cutthroat use. One specific location that could generate turbidity outside seasonal norms is a culvert placement located in section 36 approximately ½ mile above cutthroat distribution. This culvert is located on the first stream crossing on the 3-7-36.6 road. Cutthroat trout are the only special status species in this area; all others including coho steelhead and lamprey are located over a mile downstream.

Since the populations of salmonids are generally found downstream of cutthroat, the potential of impacts from this project to other salmonids decreases with increasing distance downstream. The distance of density management units from populations of coho, steelhead and other fish in the Nestucca Watershed vary, but most are over a half mile away.

This density management project should not have impacts to any salmon, steelhead or other fish populations. There are a few exceptions to this that are outlined below. Small amounts of sediment input are anticipated from harvest, culvert placements and timber hauling, however there is a low potential to affect individual fish or their habitat. There are a few exceptions to this that are outlined below. These potential impacts to individual fish are likely to be of short duration (i.e. during the first substantial rains upon completion of the action, and for no more than a day or two). Any impacts would occur at the site scale, an example being the input of road sediment at a stream crossing via the roadside ditch. Inputs of fine sediments would occur during the wet season when background levels of turbidity are naturally higher and are not anticipated to change the habitat for any fish species.

With the potential exception of cutthroat trout there would be no additional behavioral changes anticipated by any of the MSA or Special Status Species (coho, steelhead, and chinook) near the confluence of the tributary to Jane Creek associated with the planned culvert placement on road 3-7-36.6. While this action may elicit a behavioral response on a few individual fish it would have no effect on the long term sustainability (no effect to food or habitat) of the population as a whole.

The two culvert placements on rd 3-7-36.6, on a short steep first order unnamed tributary, are anticipated to deliver small amounts of sediment/turbidity to the Nestucca River approximately ¼ mile downstream. This turbidity may be visible at the streams confluence with the Nestucca River as a narrow line along the edge of the channel affecting at most 150 square feet. Due to the large volume of water in the Nestucca complete mixing with no change in visible turbidity would occur within 100 feet. The timing of these inputs is anticipated to occur during the first major rains of the year. The fish present in this portion of the Nestucca at this time include adult chinook (Spring and Fall), juvenile coho, potentially adult coho, steelhead (summer, potentially fall) and cutthroat trout. While this action may elicit a behavioral response on a few individual fish it would have no effect on the long term sustainability (no effect to food or habitat) of the population as a whole or these fish at the site scale.

*Summary of effects to fish and fish habitat*

In summary, fish within the Nestucca rearing in these stream segments are not anticipated to be affected by the suspended sediment that arises from this proposed action beyond moving away. The amount of

suspended sediment is anticipated to be a negligible portion of the current suspended sediments or bedload within stream segments in the Upper Nestucca Watershed. A few individual rearing juveniles may be subject to higher turbidity if they remain at the mouth of the one tributary planned for two culvert placements. Road density would decrease, a beneficial effect, by the completion of this project. "Coarse woody debris creation would be proportionally higher in Riparian Reserves than uplands to better meet in-stream wood recruitment needs." (Silvicutural Prescription, Project Record #44, pg. 18). As such, LWD would be affected to a negligible degree. Effects have the potential to be beneficial and adverse; these effects are expected to be minor in either direction and are not anticipated to affect fish habitat within the Nestucca River. No adverse impacts to Essential Fish Habitat are predicted by the implementation of this action.

Cumulative Effects

The analysis area for cumulative effects to fish and fish habitat is the Elk Creek 6th field watershed located in the Upper Nestucca watershed. The area of potential cumulative effects within the Elk Creek Watershed is the 6.8 mile segment of the mainstem of the Nestucca River from the confluence of Elk Creek to the confluence of Bald Mountain Fork Nestucca. Potential cumulative effects include: (1) sediment from harvest or hauling from multiple timber sales in the area and, (2) the loss of LWD from riparian zones on State and private lands on approximately 0.75 miles of stream channel. Other known actions in the area include ongoing reciprocal Rights of Way agreements with the State of Oregon and private timber owners that permit the hauling of timber on BLM roads in the analysis area (estimated at 3 million board feet annually). Sediment associated with log hauling from the various actions in the analysis area is generally not anticipated to increase noticeably from the current condition on any of the major haul routes. The various actions should occur in the watersheds on different haul routes and during different time periods but there is some potential for overlap. Where hauling from multiple actions occurs during the wet season on one route, the amount of road related sediments would be anticipated to increase proportionally. The greater the amount of use of a specific road during the wet season the greater the potential for adverse effects to individual fish from road related sediment.

Under connected actions there is no thinning, road construction/reconstruction/ decommissioning and limited haul on gravel roads within the Yamhill Watershed. No direct or indirect effects are anticipated to Bureau Sensitive Fish or Essential Fish Habitat. No effects are predicted so there would be no cumulative impacts in the Yamhill Drainage.

Except on federal lands, LWD inputs to streams across the Nestucca Watershed are anticipated to be maintained at a reduced potential for the foreseeable future; this is primarily due to harvest on ODF and private lands as stands come of age for harvest. Since trees would be removed from riparian areas on these ownerships, it is anticipated that LWD levels would decline in the short term or be maintained at a low or current level. Although no timber harvest would occur within the Riparian Reserves of the mainstem Nestucca River, the proposed action would harvest some trees from Riparian Reserves on adjacent tributaries. Riparian Reserves are designed to promote the growth of late-successional trees near stream channels; the majority of the lands in the analysis area are managed by BLM. The other active BLM timber sales in the Nestucca Watershed are anticipated to reduce LWD levels in the short term, however the amount is minimal due to the use of no harvest buffers and the long term increase in the size of the remaining trees in treated stands (future LWD sources). All the federal timber harvests in the area are located on stable slopes, and there is a low potential for landslides that would contribute LWD to streams in these areas. Unstable areas, the largest potential source of LWD inputs, are not proposed for treatment on Federal lands thereby maintaining the current potential of individual or groups of trees falling into the stream or riparian zone in association with landslides. These sources of LWD would be maintained within most of the action area. With the current amount of LWD at a level determined to be Not Properly Functioning, the minor decreases in LWD may reduce the rearing potential of streams for salmonids in the short term primarily on tributary streams, however these potential effects are not quantifiable and in the long term larger diameter trees that are recruited to the stream channel from untreated areas would provide

a greater benefit to salmonids. Extensive restoration, including the addition of LWD, has occurred within the mainstem portion of the Nestucca River identified as the analysis area for cumulative effects.

### *2.3.8.2 Alternative 2: No Action Alternative*

This alternative would maintain the current condition for the analysis area as described in the affected environment portion of this document (2.3.8). There would be no potential loss of LWD due to timber harvest within the Riparian Reserve and none of the anticipated gain in individual tree size that is anticipated with a thinning. The effects anticipated to individual fish discussed in environmental effects would not occur nor would the potential effects to fish habitat. No adverse impacts to Essential Fish Habitat are predicted by the implementation of this alternative.

Cumulative Effects

There would be no direct or indirect effects on fisheries resources or their habitat under the no action alternative; therefore there would be no cumulative effects either.

### *2.3.8.3 Alternative 3*

The placement and removal of three culverts in steep tributary channel, after one to three years of use, have impacts similar to Alterative 1 (2.3.8.1), however due to the nature of these stream channels there is the probable outcome of two periods of sediment input to the Nestucca River; (1) first major rains after placement and (2) first major rains after removal. The same effects from sediment to OC coho, steelhead and cutthroat (aversion response) are anticipated at the confluence of the one short steep stream and the Nestucca River, however they would occur on two occasions, instead on one as in Alternative 1. As described in Alternative 1 no changes are anticipated to habitat for Bureau Sensitive species or Essential Fish Habitat for OC coho or chinook due to the short duration and minor inputs of sediment. This alternative would cause minor effects to fish on two occasions between one and three years apart, from the placement and removal of these culverts. The short duration (one to two days) and the limited scope (confluence of the Nestucca) where potential behavioral effects would occur to SSS and MSA species are the same effects as alternative 1 with two occasions of minor effects.

Cumulative Effects

Differences in cumulative effects associated with this alternative to Alternative 1 relate to road density only, the implementation of this alternative would increase road density for a short period of time and then return this section of road to a closed status.

### *2.3.8.4 Alternative 4*

This action varies very little from Alternative 1 from the standpoint of harvest and haul. The primary differences include a slight increase in the number of acres treated by helicopter versus cable and the elimination of anticipated impacts to cutthroat, steelhead or OC coho from the placement of culverts in this road 3-7-36.6. Under this alternative the three culverts on BLM road 3-7-36.6 would not be replaced and all the forest stands along the road would be yarded by a helicopter. The physical integrity of the three stream crossings would not be altered from the current condition. There would be no sediment and turbidity increases that would occur from reinstalling three culverts and using the BLM road 3-7-36.6. As described in Alternative 1 (2.3.8.1) no changes are anticipated to habitat for Bureau Sensitive species and no adverse effects to Essential Fish Habitat for OC coho or chinook due to the short duration and minor inputs of sediment.

Cumulative Effects

The cumulative effects of this alternative would be the same as Alternative 1 with the exception of the predicted short term minor impacts to SSS and MSA fish which would not occur if the culverts on this road are not replaced.

## 2.3.9 Recreation

Affected Environment

The Hoag Pass project area encompasses portions of the Nestucca Back Country Byway, the Nestucca River Special Recreation Management Area which has developed campgrounds, and the Upper Nestucca Motorcycle Trail System. This area is extensively used by outdoor enthusiasts and recreationists during the months of March through November. Uses range from camping and hunting to OHV riding and scenic drives. The OHV riding area is open year-round with the majority of the riding taking place during the months of May through September. The entire project area is used during deer and elk hunting seasons with the most use during the rifle seasons in October and November. The Jane Creek hiking trail is located within and near the project area; this primitive trail currently receives very little maintenance or use by the general public.

Environmental Effects

### *2.3.9.1 Alternative 1: Proposed Action*

Implementation of the Density Management project would affect the Upper Nestucca OHV riding area in that it would temporarily prevent use of the central portion (approximately the central one-third) of the trail system and one staging area. Connection between the two remaining staging areas and trails would be via Bald Mountain Road. This would increase the amount of OHV traffic along the Bald Mountain Road, which is also the primary haul route during logging operations within this area as well as a Back Country Byway. The additional OHV traffic along Bald Mountain Road would continue for at least one fire season following logging operations. Notification prior to the beginning of operations would reduce conflicts with the OHV users.

The haul routes incorporate the Nestucca Back Country Byway. This additional traffic on the Nestucca Access Road is of little concern. The Nestucca Access road is a two-lane, paved route with the exception of approximately 2.7 miles which is gravel. Bible Creekroad, although not two-laned, is wide enough to accommodate two larger vehicles passing. Bald Mountain road is a concern in that it is a paved, single lane forest road with limited turn-outs. During hauling operations, Bald Mountain Road has the potential to have a high volume of truck traffic, additional numbers of OHVs, and recreational travelers with varying sizes and shapes of vehicles. There is also potential for conflict with Camp Cooper Boy Scout Camp during summer camp when parents are delivering or retrieving their sons to or from camp. Notification prior to operations beginning would reduce conflicts with recreational travelers and camp visitors. Design features have been incorporated to protect impacts to the Jane Creek hiking trail.

Although it is unknown as to when aerial operations would take place, recreational travelers and campers may be affected during delays of up to two hours along the Nestucca Access Road. Posting of the possible delays would be placed at each entrance to the Nestucca Access Road with an estimated time of delay. If the flight plan included routes over and/or near the Fan Creek Campground and causes closure of the campground, campers would be displaced to another campground; this could result in a loss of campground fee revenues during aerial operations. The BLM would attempt to inform the public as to the dates of these traffic delays and/or campground closures as soon as the dates of operation are determined.

Cumulative Effects

The cumulative effects of this action are closure to portions of the Upper Nestucca OHV area incorporated with the 23 sales Oregon Department of Forestry (ODF) has scheduled within the Tillamook State Forest that will displace OHV users. ODF routinely will limit OHV access into the vicinity of active timber sales in order to limit potential conflicts. Tillamook State Forest provides for an extensive amount of OHV use. With expected closures within the State Forest coupled with closures within the Upper Nestucca

Motorcycle area, it is believed that adequate riding opportunities still exist within the region although there is potential of relocating OHV users to areas not normally used for OHV activity causing conflicts with resource use and other recreational activities.

#### *2.3.9.2 Alternative 2: No Action Alternative*

No Effect

Cumulative Effects

There would be no Cumulative Effects

#### *2.3.9.3 Alternative 3*

The affects for Alternative 3 are the same as Alternative 1 (2.3.9.1).

Cumulative Effects

The Cumulative Effects would be the same as Alternative 1.

#### *2.3.9.4 Alternative 4*

The affects for Alternative 4 are the same as Alternative 1 (2.3.9.1).

Cumulative Effects

The Cumulative Effects would be the same as Alternative 1.

### 2.3.10 Visual Resources

Affected Environment

The Nestucca River corridor is managed as a VRM (Visual Resource Management) Class I area (Salem District RMP pg.36). This is the primary zone of the Nestucca River ACEC. It incorporates an area averaging approximately 400 feet of either side of the Nestucca River. Actual distance from the Nestucca River is variable, dependent upon landscape characteristics. The objective of a Class I designation is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Environmental Effects

#### *2.3.10.1 Alternative 1: Proposed Action*

Since measures would be taken to maintain/restore the natural characteristic of the landscape, this is of minor concern. A "Rehabilitation Plan" for the Davidson rock pit, which is located along the Nestucca Access Road and has potential to be used as a helicopter landing, would be prepared to assure for protection of visual resources including State Scenic Waterway values.

#### *2.3.10.2 Alternative 2: No Action Alternative*

No Effect

Cumulative Effects

There would be no Cumulative Effects

### *2.3.10.3 Alternative 3*
The affects for Alternative 3 are the same as Alternative 1 (2.3.10.1).

Cumulative Effects
The Cumulative Effects would be the same as Alternative 1.

### *2.3.10.4 Alternative 4*
The affects for Alternative 3 are the same as Alternative 1 (2.3.10.1).

Cumulative Effects
The Cumulative Effects would be the same as Alternative 1.

## 3.0 PROJECT 2 - Fish and Wildlife Habitat Enhancement

This project consists of wildlife and fisheries habitat enhancement on approximately 911 acres. The proposal includes the creation of CWD, both snags and down logs, within upland and riparian habitats and the felling of trees into seven selected reaches of adjacent streams.

## 3.1 Purpose and Need for Action

There are a number of riparian and upland stands within the project area that have been evaluated and for various reasons are not proposed to be treated with a commercial density management treatment. In general these reasons are a current low conifer stocking, a stand age beyond the 110-year-old limit[8] and/or concerns for other resource values. Based on the current conditions of these stands, they have been identified for treatment with a habitat enhancement project (see Figure 7). Although a few stands less than 80-years-old have been identified for treatment, the project would primarily be located within conifer dominated stands greater than 80-years-old. These stands are generally deficient in late-seral habitat features such as green trees with characteristics desirable for wildlife such as broken or dead tops, and coarse woody debris (both snags and down wood). Adjacent to and fragmenting many of these older stands are young plantations approximately 15- to 20-years-old; based upon past management practices these plantations are generally deficient in down woody debris. The current condition, low occurrence, and limited distribution of these habitat features could limit biodiversity or populations of wildlife species that benefit directly or indirectly from these types of habitats and lengthen the time necessary for the development of late-seral habitat within these younger stands.

The desired future condition for the identified stands includes a greater abundance of green trees with characteristics desirable for wildlife such as broken or dead tops, accumulations of down wood, and a more diverse canopy containing snags - both individually and in small clumps. These habitat features would be used by a wide variety of species including woodpeckers. Holes created by woodpeckers would then benefit secondary cavity nesters such as flying squirrels, the primary prey species of northern spotted owls in this area. Greater levels of down wood along the edges of young plantations (adjacent to many of the older stands identified for treatment) would benefit a variety of wildlife species. For some species, this could help create a gradient between diverse habitat types, and in effect work toward reducing fragmentation, extending the influence of the older stands, and promoting the development of larger blocks of higher quality late-seral stage habitat.

The Nestucca River has some of the highest spawning and rearing densities of anadromous fish within the Tillamook Resource Area. The existing levels of large wood along most stream reaches within the project areas do not meet the standards considered to be adequate. Seven specific stream segments (within wildlife treatment areas) totaling approximately 1.9 miles, have been identified for the addition of large woody debris to stream channels and riparian areas; these segments are primarily in lower reaches of tributary streams to the Nestucca River as well as approximately 1200 feet of the Nestucca mainstem. This CWD creation project incorporates large portions of RR, the addition of CWD from fully stocked conifer stands located within the Riparian Reserves.

The desired condition is one in which habitat for fish, aquatic life, and riparian dependent species is improved. Specifically, the riparian zone and active stream channel would contain a greater amount of large woody debris. This would result in more variations in stream velocities which would create greater habitat diversity for fish and other aquatic life. Desired habitat features include interspersed pools, riffles, and glides, which promote processes such as a natural sediment regime and nutrient filtering. Logs that extend beyond stream habitats, into riparian zones and/or uplands would increase connectivity for riparian-dependent invertebrate and vertebrate species.

[8] Within the Northern Coast Range Adaptive Management Area, the maximum age for commercial thinning within Late Successional Reserves is 110 years.

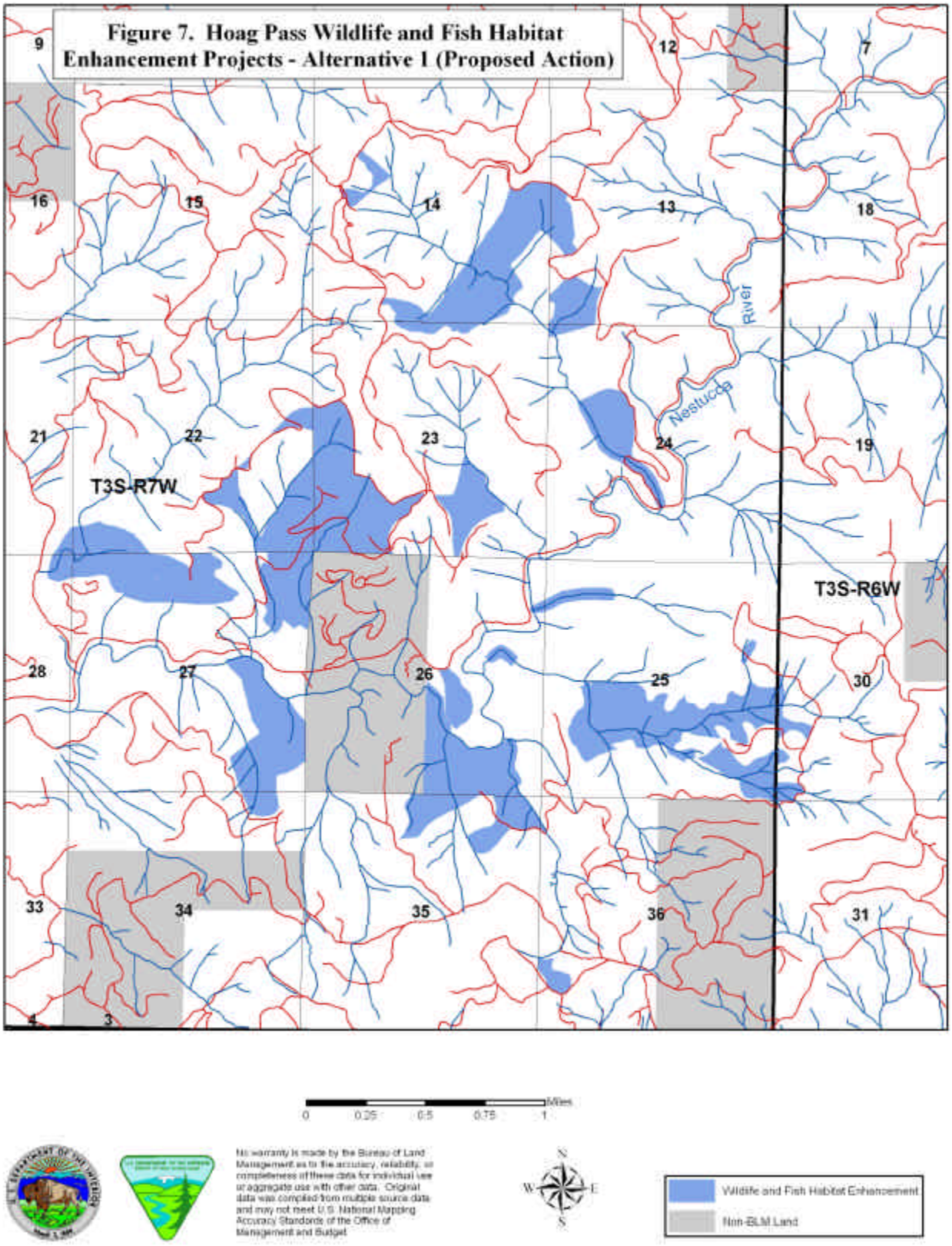


Figure 7. Hoag Pass Wildlife and Fish Habitat Enhancement Projects - Alternative 1 (Proposed Action)
9
12
7
16
15
14
13
18
Nestucca River
21
22
23
24
19
T3S-R7W
T3S-R6W
28
27
26
25
30
33
34
35
36
31
4
3
Miles
0
0.25
0.5
0.75
1
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. Original data was compiled from multiple source data and may not meet U.S. National Mapping Accuracy Standards of the Office of Management and Budget
N
W
E
S
Wildlife and Fish Habitat Enhancement
Non-BLM Land

This page intentionally left blank

## 3.2 Alternatives

### 3.2.1 Alternative Development

Pursuant to Section 102(2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall "…study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." No unresolved conflicts concerning alternative uses of available resources (section 102(2) (E) of NEPA were identified.

There are no action alternatives to the proposed action in Project 2

### 3.2.2 Proposed Action

In order to help meet the purpose and need as described above, the BLM proposes habitat enhancement that would benefit both wildlife and fish species in approximately 911 acres of upland or riparian forest including within and along approximately 1.9 miles of stream. Although trees up to 36 inches DBH may be treated, it is expected that this project would primarily treat trees up to approximately 30 inches DBH.

This project includes felling of green trees, girdling green trees at the base as well as within the live crown, topping green trees and/or potentially inoculating trees with a heart rot fungus to enhance wildlife and/or fish habitat. Along the seven selected stream segments, trees would be felled into the floodplain and/or the active channel to enhance instream and adjacent riparian habitats. Other potential design features include using CWD creation in such a way as to mimic bark beetle pockets and maximize the potential benefits through also releasing individual understory and/or overstory trees; some of the treated trees would be located in small clumps of up to about five trees. Some clumps of treated trees could be positioned in association with existing hemlock understory so as to potentially promote understory development, or be used to surround individual selected overstory trees with a ring of created snags thereby promoting the growth of individual large trees.

The proposed treatments would vary by treating up to eight trees per acre; in general these trees would be scattered throughout the treatment units. Where opportunities are available, trees would occasionally be felled from the edges of the mature stands identified for habitat enhancement into adjacent younger plantations. It is anticipated that the project would be implemented over the next 10 to 15 years as funding and work force allow.

With the exception of that portion of the project involving trees being felled into an active stream channel which would adhere to the in-stream work period (July 1 – September 15), other activities such as snag creation may occur during any time of the year. However, although all spotted owl habitat within 0.25 miles of the proposed action has been surveyed for spotted owls, implementation of the Fish and Wildlife Enhancement Project may take as long as 10 to 15 years to fully implement; spotted owl protocol surveys are generally considered to be valid for a period of 5 years. Therefore, unless activity areas are resurveyed and reconfirmed to be unoccupied by spotted owls, any implementation of portions of the project after approximately 2011 would occur outside of the spotted owl critical breeding period (March 1 – July 7) to help minimize the potential for adverse impacts to spotted owls as a result of disturbance .

Riparian Reserves

Approximately 50% of the habitat enhancement project areas are located within Riparian Reserves. Treatments applied in the Riparian Reserves would extend down to the stream channel; trees in this area would be selected so that stream shading would not be appreciably affected.

### *3.2.2.1 Connected Actions*

There are no connected actions for this project.

### *3.2.2.2 Project Design Features*

Snag and Down Wood Creation

- Only healthy appearing Douglas fir would be treated.
- *Wildlife Special Status Species:* No tree which is potentially suitable as a nest tree for the spotted owl or marbled murrelet, or contains a suspected nest of any other bird or mammal would be treated. In addition, no tree adjacent to a potentially suitable spotted owl or marbled murrelet nest tree or any tree containing a suspected nest of a bird or mammal would be treated.
- Trees selected for treatment would generally not include the largest, dominant trees within a given area, or trees with the fullest crowns and/or largest branches.
- Felling of trees would be conducted in such a way as to assure no damage to potentially suitable spotted owl or marbled murrelet nest trees, or any tree containing a suspected nest of a bird or mammal.
- *Recreation:* Created snags or felled trees would generally not be located within approximately 150 feet of a drivable road, a property line boundary where BLM land abuts non-federal ownership, any designated OHV trail or the Jane Creek hiking trail. This would reduce the potential for the creation of a safety hazard and/or the likelihood that the material would be stolen or sold as firewood.
- *Botanical Special Status Species:* Approximately five Douglas fir trees within the Fish and Wildlife Habitat Enhancement unit within T3S, R7W, sections 26 & 36 have been identified as harboring *Hypogymnia duplicata*, an uncommon lichen within this portion of the coast range; it is currently identified as a Bureau Tracking species under the BLM 6840 Special Status Species Policy and also as a Survey and Manage Category C lichen. No trees harboring *Hypogymnia duplicata* would be felled or girdled. A 100 ft buffer around existing populations would protect the host trees, surrounding habitat and microclimate. Felling of trees outside of this buffer would be directed away from populations in such as way as to assure no damage to identified host trees.
- All felled trees would be selected and felled in such a way as to minimize impacts to existing decay class 3, 4, and 5 down woody debris which is greater than 15 inches in diameter.

Felling Trees into Streams

- The in-stream work period (July 1 – September 15) would be adhered to when a portion of felled trees would be felled into anadromous fish-bearing stream reaches; it would not be adhered to when falling trees into non-fish or non-anadromous bearing streams. Trees felled into stream channels outside the instream work window would need approval by ODFW.
- Felled trees would generally not be moved or manipulated after falling; an exception is those trees felled into the active channel of Fan Creek or the Nestucca River where the position of felled trees may be adjusted with the aid of hand-powered or hand-held tools.
- No trees potentially suitable as bald eagle, spotted owl, or marbled murrelet nest trees would be removed; preference would be given to falling trees with smaller crowns.
- No trees harboring *Hypogymnia duplicata* would be felled or girdled. A 100 ft buffer around existing populations will protect the host trees, surrounding habitat and microclimate. Falling of trees outside of this buffer would be directed away from populations in such as way as to assure no damage to identified host trees.
- No trees greater than 36 inches dbh would be felled; to fall trees greater than 32 inches dbh, specific approval from the U.S. Fish and Wildlife Service (USFWS) prior to implementation would need to be obtained. *(The expectation is that most felled trees would be considerably smaller than 32 inches dbh.)*
- Single trees or small groups of trees (2-4 trees) must be spaced at least one site potential tree height apart – approximately 220 feet. These spacing requirements apply to each side of the bank independently.
- Single trees or small groups of trees (2-4 trees) must be spaced one crown width from any trees with potential nesting structure for any listed species.

- Only Douglas-fir trees would be felled.
- Trees to be felled would only be selected from those portions of the riparian stands that are fully-stocked with conifers.
- Single trees selected for falling would likely only be felled from the first two lines of trees set back from the river. *Note: it is possible that this selection criterion could be altered in order to allow for the selection of trees located further from the river; alteration of this criterion would require obtaining approval from the USFWS prior to implementation.*
- Develop and implement an approved spill containment plan that includes having a spill containment kit on site, located at previously identified containment locations. Refuel equipment (including chainsaws and other hand power tools) at least 150 feet from water bodies to prevent direct delivery of contaminants into a water body or as far as possible from the water body where local site conditions do not allow a 150 foot setback.

### 3.2.3 No Action Alternative

The BLM would not implement the fish and wildlife habitat enhancement project at this time. The plant and animal communities would continue to be dependant on ecological processes such as the natural CWD recruitment regime that is currently in place.

## 3.3 Affected Environment and Environmental Effects

Any elements that were identified in the Environmental Elements Table (Appendix 2) as being affected are described below. Their Affected Environment, Environmental Effects, and Cumulative Effects are described in detail in this section.

### 3.3.1 Forest Vegetation (Associated with Late-Successional Reserves and Riparian Reserves)

Affected Environment

As proposed, the Fish and Wildlife Habitat Enhancement Project would treat approximately 911 acres within the AMR (Late-Successional Reserve within an Adaptive Management Area) Land Use Allocation with approximately 50% of these acres also being contained within the Riparian Reserve LUA as identified in the NWFP and Salem District RMP.

The affected environment is the same as described in Project 1 (2.3.1). Although a few stands less than 80-years-old have been identified for treatment, the project would primarily be located within conifer dominated stands greater than 80-years-old. In general, these stands are at high density, but have large dominant trees, areas of developing understory of western hemlock, and levels of coarse woody debris similar to the averages described for stands in Project 1, below the Late-Successional Reserve Assessment (LSRA) target level for late-seral stands.

Environmental Effects

#### *3.3.1.1 Alternative 1: Proposed Action*

Under this alternative, up to eight live trees per acre on 911 acres of upland or riparian forest including along approximately 1.9 miles of stream would be treated by falling, girdling at the base or within the live crown, topping and/or potentially inoculating trees with a heart rot fungus for the purpose of enhancing wildlife and/or fish habitat. Scattered dominant individual trees or small groups of trees would be treated. It is not expected that trees greater than 30 inches would be treated, and no trees greater than 36 inches would be treated

The effects of the proposed action would be primarily at the tree level, reducing competition to remaining dominant and co-dominant trees or small groups of trees immediately adjacent to felled, girdled, or inoculated trees. The remaining trees would receive more light, growing space, moisture, and nutrients, and would respond with increased growth and vigor. The action would create small canopy gaps that would increase development of understory trees, hardwoods, and ground vegetation, but the gaps would likely close over time (a decade or two) as surrounding trees respond with greater crown width.

At the stand level, there would be a minor aggregated effect. The overall heterogeneity of canopy density and understory development would be slightly higher. Overall stand density would be very slightly lower, but not enough to affect overall stand growth. Treatment focused on releasing individual large trees or existing western hemlock understory would aid in development of late-successional characteristics on a very small scale, but not at a stand level (except for the definite increase in coarse woody debris). Douglas-fir bark beetle populations could be slightly higher since felling and girdling would support higher populations of bark beetles in the year following the action. Increased substrate for Douglas-fir beetle brood over the stand and landscape level could result in mortality of live trees, but they would number far less than those treated. Inoculation would not change disease transmission among trees, heart rot generally spreads through airborne spores that enter the tree through wounds or cracks, and these spores are widespread at endemic levels. Levels of coarse woody debris would be much higher in these stands than would likely result from natural processes within the next several decades.

Cumulative Effects
Cumulative effects of this project would consist of elevated bark beetle activity in the area for 1-3 years, if other areas within 2 miles have activities that create bark beetle substrate within the same 1-3 year time period that this occurs.

#### *3.3.1.2 Alternative 2: No Action Alternative*
Under this alternative, stand conditions would remain the same. Natural processes would be the primary agent for creation of coarse woody debris. Competition-related mortality would result in a gradual increase in coarse woody debris recruitment, mainly from the smaller-diameter trees. However, levels would likely remain much lower than the levels proposed for creation in Alternative 1, and would be composed of smaller diameter trees. Suppression mortality may trigger additional beetle activity, speeding canopy gap creation.

Cumulative Effects
Potential cumulative effects could occur in future decades as a result of declines in stand resiliency and slower development of some wildlife habitat components, if this area and other planned project areas were not treated. Because nearby projects have occurred recently that improved stand growth and structure, effects would probably be limited to the project area.

### 3.3.2 Threatened or Endangered Wildlife Species, Habitat and/or Designated Critical Habitat

Affected Environment

The affected environment is the same as described above in the Forest Vegetation Section (3.3.1).

Northern Spotted Owl
*Designated Critical Habitat*
Critical Habitat is designated to provide for the conservation and eventual recovery of the species. The habitat enhancement project areas are within designated critical habitat for the spotted owl (CHU # OR-41).

*Proximity to Known Sites and RPAs*
The nearest known spotted owl site, the Elk Creek site, is located approximately 2.0 miles from the nearest proposed habitat enhancement treatment unit. It is unknown if this site is currently occupied because of the lack of recent survey data, however it is generally considered to be a site which is historical in nature; spotted owls were first documented in the area in 1975 and the site has not been known to be occupied for at least two decades.

Approximately 374 acres of the proposed fish and wildlife habitat enhancement treatments are located within the Elk Creek Spotted Owl RPA (Reserve Pair Area). RPAs were delineated within the document entitled *Delineation and Management of Reserve Pair Areas within Oregon's Northern Coast Range Adaptive Management Area*, dated June 1, 2000. This document is considered supplemental management guidance to the *Northern Coast Range Adaptive Management Area Guide* and the LSRA *(Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area*.

*Spotted Owl Surveys*
The Fish and Wildlife Project areas were surveyed concurrently with the Density Management Project. As is outlined in Project 1, the suitable habitat for the projects is scheduled to be completed in August of 2006, no spotted owl pairs have been observed to date.

With the exception of that portion of the project involving trees being felled into an active stream channel which would adhere to the in-stream work period (July 1 – September 15), other activities such as snag creation may occur during any time of the year. However, although all spotted owl habitat within 0.25 miles of the proposed action has been surveyed for spotted owls, implementation of the Fish and Wildlife Enhancement Project may take as long as 10 to 15 years to fully implement. Spotted owl protocol surveys are generally considered to be valid for a period of 5 years. Therefore, unless activity areas are resurveyed and reconfirmed to be unoccupied by spotted owls, any implementation of portions of the project after approximately 2011 would occur outside of the spotted owl critical breeding period (March 1 – July 7).

*Spotted Owl Habitat*
While all of the proposed wildlife habitat enhancement units are considered to be suitable habitat for the spotted owl, portions of the stands proposed for treatment are considered to be of a marginal habitat quality based upon stand age, lack of CWD (especially hard snags) and/or simple stand structure. However, other portions of the stands proposed for treatment exhibit more complex horizontal and vertical stand structures, greater species diversity including scattered hardwoods and are set in the context of a relatively large block of unfragmented mature conifer habitat. Conditions that keep these mature stands from being considered higher quality habitat for owls primarily include the lack of nesting substrates (such as large sheltered platforms or large cavities in snags) and the lack of habitat for a suitable prey base, which is primarily the northern flying squirrel in this area. Flying squirrels have been found to be about twice as abundant in late-seral and old-growth stands as in younger seral stands and their presence is positively correlated to the abundance of large snags (Carey 1991, Corn and Bury, 1991).

<u>Marbled Murrelet</u>
*Designated Critical Habitat*
Critical Habitat is designated to provide for the conservation and eventual recovery of the species. The project areas are located within marbled murrelet designated critical habitat (CHU # OR-02-e).

*Proximity to Known Sites*
The proximity to known sites for the marbled murrelet is the same as described in Project 1 (2.3.2).

*Suitable Habitat and Murrelet Surveys*
The suitable habitat and surveys for the marbled murrelet is the same as described in Project 1 (2.3.2).

Bald Eagle
The nearest known eagle nest, which is historical in nature, is located approximately two miles from the nearest proposed wildlife habitat enhancement unit.

As mentioned in Project 1 (2.3.2), dispersed eagle usage may occur throughout the Analysis Area including the project areas wherever suitable eagle habitat is present; this eagle usage of the area would most probably occur during the late fall or winter months. However, based upon stand age and proximity to the Nestucca River, portions of some of the habitat enhancement units are considered to be suitable habitat for the bald eagle although no suitable eagle nest trees or eagle roost sites have been identified; currently this habitat is probably better suited for dispersed roosting or resting rather than nesting.

Environmental Effects

### *3.3.2.1 Alternative 1: Proposed Action*

Snag creation by tree topping, or girdling at the base or within the crown, would help promote the development of various habitat features. Creating conifer snags may retain or increase populations of cavity nesters in areas with low natural snag densities (Chambers et. al. 1997). The falling of trees would add complexity to the forest floor in the form of fresh logs in areas which are currently lacking downed wood or heavily dominated by softer logs of the later decay classes.

Treated trees which are located in clumps with the consideration of providing additional light or growing space to individual and small groups of overstory or understory trees would, on a very localized scale, help promote the development of larger conifers, small gaps in the canopy and/or a multi-storied structure. This would help accelerate crown expansion, stand differentiation, understory development and result in an increased level of diversity, both within the immediate area of the treated trees and across the whole stand.

Many of the stands proposed for treatment are adjacent to and fragmented by young plantations approximately 15- to 20-years-old; the vast majority of these plantations are deficient in late-seral "forest legacies" (e.g. large trees, snags and down logs). Treatments proposed to create greater levels of snags along the edges of young plantations and/or fall trees into the adjacent plantations could, for some species, help to create a gradient between these habitat types.

Cumulative Effects
From a cumulative impacts perspective the Fish and Wildlife Habitat Enhancement Project would help offset some of the identified short- and/or long-term adverse impacts to existing habitat resulting from the various identified commercial density management projects through the enhancement of existing late-seral habitat within the Analysis Area. These impacts include impacts to existing snags, and the natural snag recruitment processes. Similarly, BLM has implemented additional wildlife habitat enhancement projects within 1271 acres of mature conifer dominated stands located within the "Nestucca Block" LSR between May 1995 and January 2003. These projects primarily involved snag creation through girdling green trees within the live crown, this would also offset some of the possible adverse cumulative impacts to late-seral habitat.

Northern Spotted Owl - (FT)
*Designated Critical Habitat*
The Fish and Wildlife Habitat Enhancement Project is located within designated critical habitat for the spotted owl (CHU # OR-41).

*Known Sites and RPAs*
The nearest known spotted owl site, the Elk Creek site, is located approximately 2.0 miles from the nearest proposed habitat enhancement treatment unit. There are no adverse impacts to this site anticipated to result from the proposed project.

As mentioned above, a portion of the treatments would occur in the Elk Creek spotted owl RPA; implementation of the project would be fully consistent with management guidance within the document entitled *Delineation and Management of Reserve Pair Areas within Oregon's Northern Coast Range Adaptive Management Area (USDA and USDI, 2000).*

*Potential for Disturbance*
If this alternative of the Fish and Wildlife Treatment is not fully implemented by 2011, new surveys would be needed if the treatment was to exceeded ambient noise levels during the breeding period, as described in the affected environment.

*Spotted Owl Habitat*
Based upon the nature of the proposed treatments, no adverse impacts to spotted owl suitable habitat are expected. No suitable habitat would be degraded or removed; all suitable habitat would continue to function as suitable habitat post-treatment. No tree which is currently suitable as a spotted owl nest tree or any tree adjacent to a potentially suitable nest tree would be impacted.

Beneficial impacts resulting from the Fish and Wildlife Habitat Enhancement Projects include increasing the abundance of major constituent elements of spotted owl habitat in areas identified as deficient in those elements - Coarse Woody Debris in the form of both snags and down logs, as well as green trees with defect such as broken or dead tops. Created snags or snag-topped green trees would generally enhance the quality of owl habitat through providing potential denning and foraging sites for various prey species or possibly by over time, developing into suitable spotted owl nest trees.

Marbled Murrelet - (FT)
*Designated Critical Habitat*
The proposed Hoag Pass Fish and Wildlife Habitat Enhancement Project would occur within designated critical habitat for the marbled murrelet (CHU# OR-02-e).

The primary constituent elements of murrelet Critical Habitat are (1) individual trees with potential nesting platforms and (2) forested areas within 0.5 mile of individual trees with potential nesting platforms with a canopy height of at least one-half the site-potential tree height (USDI 1996). No potentially suitable murrelet nest trees would be impacted as a part of the Hoag Pass project and no openings would be created within one tree length surrounding a potential murrelet nest tree. The majority of the trees selected for treatment would include those trees with relatively little crown development and the average canopy closure of the treated stands would be negligibly reduced.

*Known Sites*
With the nearest known occupied marbled murrelet site being approximately two miles from a proposed treatment unit, there are no known occupied murrelet sites within the vicinity of any of the proposed fish and wildlife habitat enhancement project areas. No known murrelet sites would be impacted beneficially or adversely by the proposed action.

*Potential for Disturbance*
All the suitable or potential murrelet habitat within or within a minimum of approximately 0.25 miles of the proposed habitat enhancement treatment units has been or will be surveyed before project implementation.

*Impacts to Habitat*
Based upon the scale and nature of the proposed treatments, minimal adverse or beneficial impact to the suitability of the treatment area for murrelet use us anticipated, due to the design features mentioned in section 3.2.2.2.

Bald Eagle - (FT)
The nearest known eagle nest, which is historical in nature, is located approximately two miles from the nearest proposed wildlife habitat enhancement unit; no impacts to this site as a result of the proposal are anticipated. There are no identified eagle roost sites within the area.

*Potential for Disturbance*
The potential disturbance for eagles for the Fish and Wildlife project is the same as was described in Project 1 (2.3.2.1).

*Habitat Modification*
Based upon stand age and proximity to the Nestucca River, portions of some of the habitat enhancement units are considered to be suitable habitat for the bald eagle although no suitable eagle nest trees or eagle roosts have specifically been identified; this habitat is probably better suited for dispersed roosting or resting rather than nesting.

Based upon the scale and nature of the proposed treatments, no short or long-term adverse impacts to eagle habitat are expected. The creation of additional snags within these areas has the potential for some minor longer-term beneficial impacts to the quality of eagle habitat within the area through providing an increased opportunity for roosting sites and given enough time, potential nest sites.

#### *3.3.2.2 Alternative 2: No Action Alternative*
Under this alternative the BLM would not implement the fish and wildlife habitat enhancement project. The plant and animal communities would continue to be dependant on ecological processes such as the natural CWD recruitment regime that is currently in place. Under the "No Action" Alternative, the identified impacts of the action alternative upon wildlife and/or wildlife habitat would not occur within the identified treatment units at this time.

A total of 911 acres of mature forest would not receive treatment to augment current CWD levels in the form green trees converted into snags or snag topped green trees, trees felled for down log habitat and/or instream large woody debris. The CWD habitat components within the treatment units would continue to be heavily weighed toward down logs of the later decay classes rather than having a wider range of decay classes present within the stands and a larger percentage of the total CWD volume present in the form of snags. The forest stands would continue to grow and develop without management intervention. The development of those features of late-seral stage habitat promoted by implementation of the wildlife habitat enhancement projects (e.g. snag-topped green trees, snags, fresh down logs) would be expected to occur in a slower time frame than under Alternative 1. The Desired Future Condition, late-seral stage habitat with a CWD level equal at least to 3200 to 5940 cubic feet of CWD per acre, spread across all decay classes with approximately half of the volume being in snags and half in down logs would be expected to be eventually reached, but over a longer period of time.

Cumulative Effects
There are no identified cumulative impacts to wildlife or wildlife habitat associated with the No Action Alternative.

### 3.3.3 Threatened or Endangered Fish Species or Habitat

Affected Environment

The Fish and Wildlife enhancement project is located within the Nestucca Watershed which does not have listed or proposed fish species or habitat.

Environmental Effects

#### *3.3.3.1 Alternative 1: Proposed Action*

Since none of the proposed action is located in the Yamhill Watershed no direct, indirect or cumulative effects are anticipated to occur. Within the ESU for either Upper Willamette steelhead or chinook, there are no direct or indirect effects to these species and no effects to their critical habitat.

#### *3.3.3.2 Alternative 2: No Action Alternative*

As this is a No Action alternative there would be no change from the current condition. This project is not planned within a watershed with T & E species.

### 3.3.4 Water Quality

Affected Environment

The affected environment is similar to that in Project 1 (2.3.4) except for the following: (1) All of the lands are within the Upper Nestucca River/Elk Creek 6th field watershed; (2) Lands are generally at lower elevations; (3) Some lands in this project area are steeper and more prone to mass movement. Some areas are poorly drained; (4) Streams are generally larger including about 1,200 feet of the mainstem Nestucca River.

Environmental Effects

#### *3.3.4.1 Alternative 1: Proposed Action*

The primary action by which this alternative could affect water quality is from falling trees around streams. The project action is expected to have no measurable effect on water quality at the 5th and 6th watershed scale. At the site/local scale, project action would result in a small amount of sediment input and localized stream bank material being displaced. Implementation of Project Design Features (3.2.2.2- Felling Trees into Streams) such as limiting the an in-stream work period to July 1 – September 15, spacing trees to be cut far apart away, selecting from those portions of the riparian stands that are fully-stocked with conifers, and generally not moving fallen trees would greatly minimize the potential for adverse impacts to water quality (temperature, pH, DO, sediment) and loss of physical integrity of the aquatic system. Any short-term sediment and turbidity inputs would be in short pulses and likely not be measurable or visible far (<50 feet) downstream. In the long-term, the project would improve water quality by increasing the amount of LWD, sediment storage capacity, and pool quality in local streams.

Cumulative Effects

The proposed project at the local/stream site scale would increase the level of in-stream of large woody debris and help compensate for the removal of small amount of large wood removed by logging projects planned. Viewed at the 5th and 6th field watershed scale, the project would not have any measurable effect on hydrology including the physical integrity, water quality, and sediment regime or stream-flow. The amount of large woody debris, sediment storage capacity, and quality pools would remain essentially unchanged, below the historic range of conditions. No other uses are expected to affect this resource in the project area.

#### *3.3.4.2 Alternative 2: No Action Alternative*

Under this alternative the fish and wildlife habitat enhancement projects would not be implemented. There would be no direct effects to water quality and stream hydrology. Trees would not be felled along streams that could interact with stream channels and collect sediment and debris. Although trees would continue to grow without management intervention, the dense stands would grow at a slower rate. Streambed roughness, in-stream wood and sediment accumulation would gradually increase.

Cumulative Effects

At the 5th and 6th watershed scale the direct and indirect effects to water quality from No Action would be small to be measurable. Effects would be contained within the project areas, and there would be no other uses affecting this resource. Current low levels of LWD in streams, lack of sediment storage capacity, and quality pools would continue at current trends, changing periodically with new disturbance.

## 3.3.5 Invasive, Nonnative Species (Executive Order 13112)

Affected Environment

Botanical surveys for Invasive, non-native plant species within the Hoag Pass project area began in June 2004. There are many Priority III invasive species that grow within the project area, including *Cirsium vulgare*, *Cytisus scoparius*, *Senecio jacobaea*, *Rubus discolor,* and *Hypericum perforatum,* however, established populations are most commonly located along existing roads. Within undisturbed timber stands, established native plant associations typically prevent the establishment of invasive, non-native populations. Most non-native weed species are not shade tolerant and will not persist in a forest setting as they compete for light when tree canopies close and light to the under-story is reduced.

Environmental Effects

### *3.3.5.1 Alternative 1: Proposed Action*

Minimal to No Effect - Project design features such as girdling or felling of individual trees would not result in the type or amount of disturbance that would allow for an increase in populations of invasive, non-native species. Because these activities would occur within established native plant associations, existing competition from native populations would mitigate the establishment of any invasive, non-native species.

Cumulative Effects

The analysis area for cumulative effects to noxious/non-native invasive plant species is in the Northern Oregon Coast Range approximately 22 miles south east of the town of Tillamook, Oregon located in the upper reaches of the Nestucca River watershed. Examples of forest management activities within the affected area that will create soil disturbance and influence the spread of noxious/non-native invasive plant species are: commercial and pre-commercial density management thinning, young stand maintenance, new road construction, road decommissioning, road maintenance, culvert replacements, helicopter landing zones, and off highway vehicle (OHV) trails. Activities that do not necessarily create disturbance but influence the spread of weed seeds are recreational hiking, biking, horseback riding, fishing, and hunting. Other sources of seed dispersal are from wildlife that are either passing through or frequent the area, water movement and wind. Many past and present management activities tend to open dense forest setting and disturb soils therefore providing opportunities for widespread weed infestations to occur. Many, if not all of the weed species identified as Priority III (established infestations) on the Oregon Department of Agricultures (ODA) noxious weed list are present throughout the area. Because they are present in the project area, seed is readily available for dispersal. Most non-native weed species are not shade tolerant and will not persist in a forest setting as they compete for light when tree canopies close and light to the under-story is reduced.

### *3.3.5.2 Alternative 2: No Action Alternative*

No Effect – The plant communities within the project area would continue to be dependant on ecological processes currently in place if no action is taken. No appreciable increase in the noxious weed populations identified during the field surveys is expected to occur.

Cumulative Effects

There would be no Cumulative Effects under Alternative 2.

### 3.3.6 Soils

Affected Environment

The project area is in the same general area as Project 1, (See Section 2.3.5). The environment described under the Project is similar except for the following differences: (1) All lands in this project area are within the Nestucca watershed. (2) Lands are generally at lower elevations. (3) More areas are steeper ground. Some areas are prone to mass movement. (4) Some of the soils are poorly drained. (5) There are fewer roads and very little evidence of soil disturbance from past forest management activities.

Environmental Effects

#### *3.3.6.1 Alternative 1: Proposed Action*

Implementation of the proposed action would result in minimal soil disturbance and no loss in long-term soil productivity. Felling of smaller diameter trees (<30 inches dbh) would add a small amount of organic matter to the forest floor. This addition would have a slight beneficial affect on soil productivity at the site scale, which would not be measurable at the project level and watershed scale. Current soil processes and conditions would continue to occur based on current conditions.

Cumulative Effects

No cumulative effects to soil resources would result from the proposed action in the project area. Effects would be contained within the project areas, and there would be no other uses affecting this resource.

#### *3.3.6.2 Alternative 2: No Action Alternative*

Implementation of the proposed action would result in no soil disturbance; therefore there would be no effect. The soil resource within the project area would continue to evolve dependant on ecological processes currently in place.

### 3.3.7 Special Status and SEIS Special Attention Wildlife Species and Habitat

Affected Environment

As proposed, the Fish and Wildlife Habitat Enhancement Project would treat approximately 911 acres within the AMR (Late-Successional Reserve within an Adaptive Management Area) Land Use Allocation with approximately 50% of these acres also being contained within the Riparian Reserve LUA as identified in the NWFP and Salem District RMP.

The affected environment is the same as it is described in Forest Vegetation of Project 1 (2.3.1). Although a few stands less than 80-years-old have been identified for treatment, the project would primarily be located within conifer dominated stands greater than 80-years-old. In general, these stands are at high density, but have large dominant trees, areas of developing understory of western hemlock, and levels of coarse woody debris similar to the averages described for stands in Project 1, below the target level for late-seral stands (LSRA).

Mollusks - BS (Bureau Sensitive) and/or Survey and Manage

The proposed habitat enhancement project areas contain suitable habitat for mollusks including species on the Bureau's Manual 6840 Special Status Species List and/or listed as Survey and Manage Species. However, based upon the various project design features, as well as the nature of the habitat features to be impacted, the habitat enhancement projects have been determined not to be "habitat altering" to the point of triggering the need for pre-project mollusk surveys.

Columbia Torrent Salamander - (BS) Bureau Sensitive
The Columbia torrent salamander is strongly associated with the splash zone directly adjacent to permanently flowing streams and seeps. Although the limited survey efforts for this species failed to confirm the occurrence of this species within the area, they are assumed to be present where suitable habit is present. Portions of the habitat enhancement project areas may be located in direct proximity to suitable torrent salamander habitat. Most notably these areas would include where trees would be felled into seven selected stream reaches, totaling approximately 1.9 miles in length and where other treatments within riparian areas include the creation of CWD, both snags and down logs. While only a relatively small portion of the treatment areas would be expected to occur within areas of suitable habitat for this species, approximately 50% of the habitat enhancement project areas are located within Riparian Reserves. Treatments applied in the Riparian Reserves would extend down to the stream channel however trees in this area would be selected so that stream shading would not be appreciably affected.

Harlequin Duck – (BA) Bureau Assessment
The affected environment for the harlequin duck is the same as described in Project 1 (2.3.7).

NWFP Bats
The affected environment for the NWFP bats is the same as described in Project 1 (2.3.7).

Townsend's Big-Eared Bat - (BS)
The affected environment for Townsend's big-eared bat is the same as described in Project 1 (2.3.7).

Red Tree Vole - (BS) and Survey and Manage
All of the proposed Fish and Wildlife Habitat Enhancement treatment units contain suitable habitat for the red tree vole. While the nature of the proposed treatments would not trigger the need for pre-project protocol surveys, portions of the Fish and Wildlife Habitat Enhancement treatment units were surveyed for tree voles in conjunction with surveys conducted for the Hoag Pass Density Management project (see project record document #18). These surveys were included in the discussion for the red tree vole in Project 1 (2.3.7).

## Environmental Effects

### *3.3.7.1 Alternative 1: Proposed Action*

Implementation of Alternative 1 of the Fish and Wildlife Enhancement Project would not be expected to result in the loss of population viability for any Special Status Species that may occur in the project area, or result in the need to elevate their status to any higher level of concern including the need to list under the ESA. This is primarily a result of the nature and scope of the proposed project (include incorporated design features to minimize the potential for adverse impacts) as well as the nature of the habitats impacted and/or enhanced.

Overall, a wide range of Special Status Species which utilize or depend upon snags and/or downed logs in addition to those discussed below such as the clouded salamander and pileated woodpecker (both Bureau Tracking species) would be expected to benefit from the proposal.

Mollusks- BS (Bureau Sensitive) and/or Survey and Manage
Due to the nature of the project, no impacts to Special Status or Survey and Manage mollusk species or their habitats are expected to result from the proposed wildlife habitat enhancement projects. Should any populations of mollusk species of concern be present within or near a treatment unit, the project would not be expected to adversely impact the population or contribute to the need to elevate their status to any higher level of concern including the need to list under the ESA. Should either of the mollusk species also identified as Survey and Manage species be present within or near the treatment units, the project would not be expected to adversely impact the maintenance of the species at the site.

Columbia Torrent Salamander - (BS) Bureau Sensitive
Treatments applied in the Riparian Reserves would extend down to the stream channel (associated habitat) however trees in this area would be selected so that stream shading would not be appreciably affected.

Although there is potential for this project to minimally impact a limited quantity of suitable torrent salamander habitat, this impact is considered negligible based upon the nature of the project, expected impacts to habitat quality and extremely small portion of the available habitat to be impacted.

Harlequin Duck - (BA) Bureau Assessment
The proposed fish and wildlife habitat enhancement project is not expected to affect harlequin ducks to a great degree. It is possible that the ducks could still be in the river in the vicinity of the Fish Habitat Enhancement project areas located in or near Fan Creek and/or at various points downstream while work is commencing. Due to concerns associated with fisheries resources, the in-stream work period (July 1 – September 15) would be adhered to when trees would be felled into anadromous fish-bearing stream reaches; this would serve to minimize the potential for adverse impacts to duck breeding behavior.

Since the ducks are highly mobile by the time any work begins they would be able to avoid disturbance simply by moving away from the site. This potential for disturbance could be minimized by scheduling work to occur along the Nestucca River as late in the breeding season as possible, preferably into or after mid-August. The fact that the ducks use most of the river for foraging while en route to the sea indicates that they are not dependant on any particular reach of the river for survival. In summary, the proposed action may cause some short term (less than a week) disturbance to female ducks with young. Impacts to the harlequin habitat are expected to be negligible.

Bats (including NWFP bats and the Townsend's Big-Eared Bat)
There are no known bat roosting or hibernaculum sites within the project area.

Red Tree Vole - BS (Bureau Sensitive) and Survey and Manage
All of the proposed treatment units contain suitable habitat for the red tree vole and it is possible that portions of the various treatment units are currently occupied by red tree voles. Potential adverse impacts to tree voles are minimized by the inclusion of the project design feature that no tree which contains a suspected nest of any bird or mammal, or any adjacent tree would be treated.

Based upon the nature of the proposed wildlife habitat enhancement treatments, including the fact that a very small portion of the available habitat would be impacted, the project would not be expected to impact the current or future suitability of the treated stands for use by red tree voles. Impacts to individual red tree voles possibly occupying the proposed actions areas would be expected to be very unlikely as a result of implementing the proposed wildlife habitat enhancement treatments. The project is expect to result in the protection of the physical integrity of any nest site that may be within the treatment areas to maintain its population and provide for expansion of the number of active nests at the site.

Roosevelt Elk and Black-Tailed Deer
It is expected that the Proposed Action would temporarily displace individual deer and elk as they react to the disturbance created by project implementation. This would not impact the health of the populations based upon the limited length of time of the disturbance and the fact that other, relatively undisturbed suitable habitat is present within the vicinity of the proposed action.

Cumulative Effects
There are no identified cumulative impacts to any Special Status Species wildlife or wildlife habitat associated with Alternative implementation of Alternative 1.

### *3.3.7.2 Alternative 2: No Action Alternative*

Under this alternative the BLM would not implement the fish and wildlife habitat enhancement project. The plant and animal communities would continue to be dependant on ecological processes such as the natural CWD recruitment regime that is currently in place. Under the "No Action" Alternative, the identified impacts of the action alternative upon wildlife and/or wildlife habitat would not occur within the identified treatment units at this time.

A total of 911 acres of mature forest would not receive treatment to augment current CWD levels in the form of green trees converted into snags or snag topped green trees, trees felled for down log habitat and/or instream large woody debris. The CWD habitat components within the treatment units would continue to be heavily weighed toward down logs of the later decay classes rather than having a wider range of decay classes present within the stands and a larger percentage of the total CWD volume present in the form of snags. The forest stands would continue to grow and develop without management intervention. The development of those features of late-seral stage habitat promoted by implementation of the wildlife habitat enhancement projects (e.g. snag-topped green trees, snags, fresh down logs) would be expected to occur in a slower time frame than under Alternative 1. The Desired Future Condition, late-seral stage habitat with a CWD level equal at least to 3200 to 5940 cubic feet of CWD per acre, spread across all decay classes with approximately half of the volume being in snags and half in down logs would be expected to be eventually reached, but over a longer period of time.

Cumulative Effects

There are no identified cumulative impacts to any Special Status Species wildlife or wildlife habitat associated with the No Action Alternative.

## 3.3.8 Fish Species with Bureau Status and Essential Fish Habitat Affected Environment

Affected Environment

As the Fish and Wildlife Habitat Enhancement project is located in the same geographic area as the density management thinning, see section 2.3.8 for a description of the affected environment.

Environmental Effects

### *3.3.8.1 Alternative 1: Proposed Action*

*Yamhill*

Since none of the acres proposed for treatment are located within RR in the Yamhill Watershed there would be no direct, indirect or cumulative effects. Within the ESUs for either Upper Willamette steelhead or chinook, there are no effects to these species and no effects to their critical habitat. Coho a MSA species within the Yamhill watershed are not anticipated to have any effects to their habitat as a result of this action.

*Nestucca*

The creation of LWD (snags and downed logs) in Riparian Reserve verses the creation of Course Woody Debris (CWD) in upland areas has distinct differences between potential effects to SSS or MSA species. The potential of effects to any fish species are only possible within the Riparian Reserve land use allocation and primarily only when trees are felled into streams with these fish. Some of the project areas are adjacent to Essential Fish Habitat for Oregon Coast coho and spring and fall chinook salmon. All of the other Special Status Species (fish) discussed in the affected environment portion of Project 1 are also located adjacent to portions of this project.

There are effects anticipated from planned LWD additions to stream channels where SSS and MSA species are located. These effects would range from an aversion response to the potential of mortality for a few individuals. When these trees are felled these species may move away either from a tree falling in the water or as a result of short pulses of sediment generated. Outside of the first site potential tree height there are no anticipated effects to either SSS or MSA species from CWD additions or snag creation.

Effects to fish from the proposed action could include an aversion response and the chance of direct mortality. While this action may elicit a behavioral response on a few individual fish it would have no effect on the long term sustainability of the population as a whole.

Falling and/or topping of selected trees directly into the stream channel would result in localized turbidity. It is not anticipated that this would exceed 2 hours in any 24 hour period. These actions would be implemented consistent with the Project Design Criteria contained in NOAA fisheries Biological Opinion dated February 25, 2003 for 10 programmatic actions occurring in NW Oregon. Document #2002/01880 (BLM) "Endangered Species Act Section 7 Formal consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for U. S. Forest Service and Bureau of Land Management Programmatic Activities in Northwestern Oregon".

Effects to substrate as a result of this action are not anticipated to occur until streams in the area rise to or near to bankfull stage. These effects are anticipated to be both beneficial and adverse. As the streams in the area begin to rise during large winter storm events, sorting and routing processes of instream substrates would begin to occur, which would produce small pulses of sediment. However, with the addition of LWD the transport of gravels within this stream segment would change. The greatest change anticipated is the trapping and aggregation of the stream channel or the formation of pools adjacent to where LWD is added which would increase fisheries habitat.

With the implementation of this project adverse impacts are predicted to individual SSS or MSA species however these adverse affects are offset by beneficial effects to their habitat. The loss of a few individual fish (SSS or MSA species) would not elevate concern for these species, their status or contribute to the need to list under the Endangered Species Act. Short term, site scale adverse effects to Essential Fish Habitat would occur, however the long term effects are anticipated to be primarily beneficial in nature.

Cumulative Effects

There are actions that may be considered cumulative to the fish and wildlife habitat enhancement for species listed as either SSS or MSA at the watershed scale, however only those portions of this project occurring within the first site potential tree height fit this description. These other projects include the Upper Nestucca Restoration and Enhancement Project, which included the placement of LWD into the Nestucca river system. Other projects include multiple culvert replacements for fish passage. The direct input of LWD by the Hoag Pass projects and other identified actions are increasing this habitat element or providing access to that habitat.

The addition of tress to identified stream reaches, riparian zones but not including upland areas within the Hoag Pass Project are anticipated to directly alter the current condition of the aquatic system. These LWD additions within the riparian zone or directly to the stream channel would provide a benefit to the matrix indicators for LWD, pool area, pool quality, and refuge habitat. In addition substrate conditions should improve due to the addition of these channel forming elements (trees). The addition of trees to the upland areas is not anticipated to have any affect to fish or their habitat and cannot be considered cumulative to other actions in the Nestucca Watershed.

Since several of the fish and wildlife treatment units are adjacent to streams that may be occupied by anadromous salmonids, the addition of LWD into or adjacent to the stream has the potential of being both beneficial to habitat, and adverse to individual fish. Snag and LWD creation activities are likely to result in

small, localized benefits to riparian and aquatic habitat by accelerating the growth of individual conifer trees and increasing the amount of LWD at individual locations. There is a possibility of sediment delivery if any trees are felled into or near streams. Any increase in sediment and turbidity would be small, of short duration, and localized. In addition as the timing of this restoration activity would primarily occur during ODFW'S instream work window, the only other activities that could generate cumulative effects within the analysis area are culvert replacements and other LWD addition projects.

### *3.3.8.2 Alternative 2: No Action Alternative*

As this is a no action alternative there would be no change from the current condition. The addition of LWD would not occur within the Riparian Reserve and the beneficial effects to habitat elements such as pools, gravel storage and routing and sediment storage would not occur. As LWD is a primary element in the creation and maintenance of high quality fish habitat and the current quantities within the Nestucca are considered to be low, this alternative maintains stream channels in this category. This alternative does not preclude natural recruitment of LWD to these stream channels, however the time frame for its contribution is anticipated to stretch into many decades. As no actions would occur there would be no effects to SSS or MSA species either beneficial or adverse.

Cumulative Effects

There would be no Cumulative Effects under Alternative 2.

# 4.0 PROJECT 3 - Roadside Hardwood Removal for Road Maintenance

The removal of roadside hardwoods would occur on BLM land along approximately 9 miles of arterial forest roads (see Figure 8). The proposal includes cutting hardwoods which grow out of the cut banks, above the cut bank and/or out of the fill slopes, and are located close enough to the road that they cause transportation problems. This activity would not occur in areas where the targeted trees are the primary source of shade on watercourses.

## 4.1 Purpose and Need for Action

Roadside hardwoods have become a problem along many of our existing roads which are planned to be maintained in an drivable condition. These roadside trees are often growing out of the cut banks, above the cut bank and/or out of the fill slopes. Trees growing on the cut banks often cause minor debris slides onto the road surface as they are generally unstable and tend to up-root. Trees growing on the fill slopes and above the cut banks usually lean over the road; these trees tend to break off during storms and/or lean and block the road. These trees tend to keep the road wet and the leaves contaminate the aggregate surface rock thereby shortening the usable lifetime of the rock and potentially increasing sediment runoff. This results in increasing costs and difficulty in maintaining the road system.

The desired condition is where the amount of windthrow, debris slides, and down trees after storms is reduced, creating a safer and more stable road. Also the road maintenance costs and potential sediment run-off into streams are lower due to less degradation of the rock by leaves and other debris.

## 4.2 Alternatives

### 4.2.1 Alternative Development

Pursuant to Section 102(2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall "…study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." No unresolved conflicts concerning alternative uses of available resources (section 102(2) (E) of NEPA were identified.

There are no action alternatives to the proposed action in Project 3.

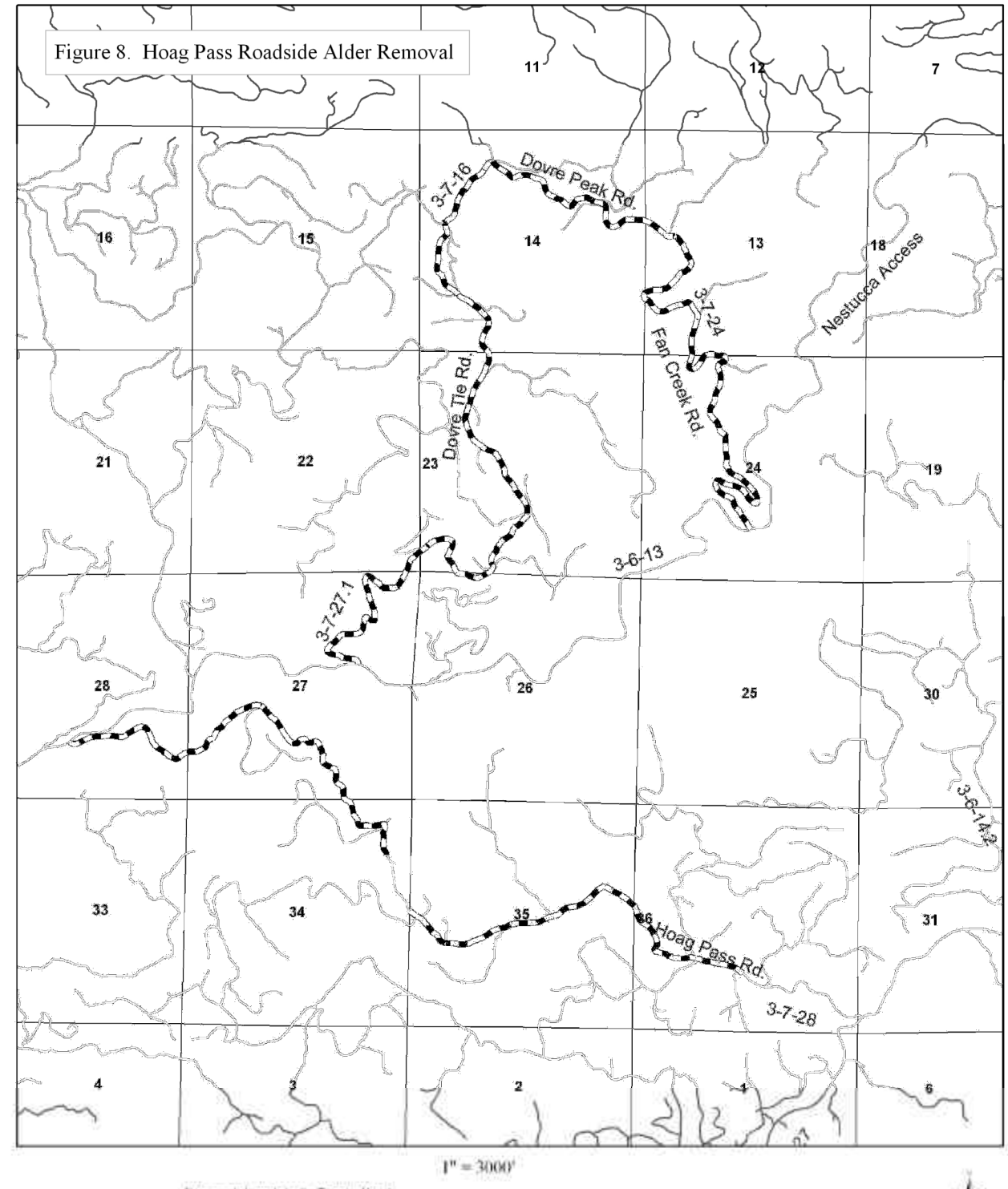
### 4.2.2 Proposed Action

In order to achieve the Purpose and Need stated in section 4.1, the BLM proposes to cut leaning trees which are located inside and just outside of the road prism, but lean over the road and cause extra maintenance costs. Most of the trees that would be treated would be hardwoods, primarily red alder and bigleaf maple, although an occasional conifer may be cut. Tree removal is not expected to occur more than 25 feet from the road edge. This project would treat approximately 9 miles of road. The roads proposed for treatment are Hoag Pass, Dover Tie, Dover Peak, and Fan Creek. The treatment would only occur along portions of these roads that are located on BLM land.

The diameter of the hardwoods removed would generally be 4-12 inches with a few trees of merchantable saw timber size, perhaps up to 20 inches. These trees may be removed commercially as sawlogs, firewood or woodchips, offered to the public as personal-use firewood, and/or left on site as chipped material or Coarse Woody Debris.

This page intentionally left blank

Figure 8. Hoag Pass Roadside Alder Removal



This page intentionally left blank

#### *4.2.2.1 Connected Actions*

There are no connected actions.

#### *4.2.2.2 Project Design Features*

The proposal includes cutting primarily bigleaf maples or red alders which grow out of the cut banks, above the cut bank and/or out of the fill slopes, and are located close enough to the road that they cause transportation problems. Only conifers that are smaller than 6 inches in diameter would be cut. Trees that provide shade for streams would generally not be cut, unless they pose a high hazard risk.

All equipment used in the implementation of the Roadside Hardwood Removal Project would be limited to the existing road surface.

Seasonal Restrictions

- Any commercial hauling of hardwoods, either as sawlogs, firewood or woodchips, shall occur during the dry season of operation depending on soil moisture. Other hardwoods disposal shall occur year round depending on weather, soil moisture, work-force availability and/or fire danger (i.e. personal-use firewood cutting, dispersed chip blowing, CWD enhancement).

Special Status Species

- Felling of trees would be conducted in such a way as to assure no damage to potentially suitable spotted owl or marbled murrelet nest tree, or any tree containing a suspected nest of a bird or mammal.

Safety

- Hardwoods which are located slightly outside of the road prism but lean in such a way that a large portion of the tree is above the road would be cut.
- All slash that impedes sight distance would be moved so that it doesn't impede line of sight.

Fire

- All slash less than 6 inches diameter would be pulled back at least 25 horizontal feet from the edge of the road bed.
- All slash greater than 6 inches diameter would be removed from the road prism.
- The resulting depth of slash would not exceed 3 feet. To achieve this scattering and/or bucking of cut material may be required.

Nestucca River State Scenic Waterway

- In order to protect State Scenic Waterway values, that portion of the project area along the lower segment of Hoag Pass Road, flanking the bridge over the Nestucca, would be given special attention. For approximately 50 feet on either side of the bridge (that area containing trees visible from the river) a few trees may be removed if necessary however selective limbing or pruning would be strongly considered instead of total removal. An effective visual buffer of vegetation, including hardwoods would be retained within this area.

### 4.2.3 No Action Alternative

The BLM would not implement roadside hardwood removal for road maintenance projects at this time.

## 4.3 Affected Environment and Environmental Effects

Any elements that were identified in the Environmental Elements Table (Appendix 2) as being affected are described below. Their Affected Environment, Environmental Effects, and Cumulative Effects are described in detail in this section.

### 4.3.1 Forest Vegetation (Associated with Late-Successional Reserves and Riparian Reserves)

Affected Environment

The affected environment is forest vegetation growing just outside of the road prism (cut bank, road surface, and fill slope) of 9 miles of open roads in the project area. These areas were disturbed by the construction of the road and periodically are re-disturbed by road maintenance activities. Trees growing in these areas are generally young, dating from road construction, and are often dominated by red alder. The trees growing on the road prism are generally dissimilar from the surrounding stand in age, species composition and stand history.

Environmental Effects

#### *4.3.1.1 Alternative 1: Proposed Action*

Cutting hardwoods or unstable conifers which grow on the cut banks, above the cut bank and/or out of the fill slopes, or are located too close to the road would have very localized and minor effects. The condition or existence of trees within the road prism has very little influence on the surrounding forest stand, because the structure and processes occurring in the forest stands are spatially interrupted or independent from the road prism. Cutting of trees near the road prism would affect conditions in the road prism and only affect forest stands along the narrow interface between the two areas. More sunlight would be available to the lower canopy adjacent to the treated roads. Removal of red alder could have minor effects on nitrogen fixing but would be unlikely to have measurable effects on tree growth, or would be offset by reduced competition.

Cumulative Effects

There are no Cumulative Effects for Alternative 1.

#### *4.3.1.2 Alternative 2: No Action Alternative*

Under this alternative, trees growing in the road prism would remain. There would be no change from existing conditions.

Cumulative Effects

There are no Cumulative Effects for Alternative 2.

### 4.3.2 Threatened or Endangered Wildlife Species, Habitat and/or Designated Critical Habitat

Affected Environment

Northern Spotted Owl – (FT)

*Designated Critical Habitat*

Critical Habitat is designated to provide for the conservation and eventual recovery of the species. The Roadside Hardwood Removal Project is located within designated critical habitat for the spotted owl (CHU # OR-41).

*Proximity to Known Sites and RPAs*
The nearest known spotted owl site, the Elk Creek site, is located approximately 2.0 miles from the nearest road proposed for treatment under the Roadside Hardwood Removal Project. It is unknown if this site is currently occupied because of the lack of recent survey data, however it is generally considered to be a site which is historical in nature; spotted owls were first documented in the area in 1975 and the site has not been known to be occupied for at least two decades.

Portions of Hoag Pass Road and Dovre Tie Road which are proposed for treatment under this project are located within the Elk Creek Spotted Owl RPA (Reserve Pair Area).

*Spotted Owl Surveys*
Like the other two projects contained within this evaluation, the Roadside Hardwood Removal Project is contained within an area which has been or will be surveyed to protocol for spotted owls. Roughly 60% of the area was surveyed to protocol during the 2004 and 2005 survey seasons, while the remaining 40% of the area was surveyed during the 2005 survey season with surveys scheduled to be completed during the 2006 survey season. Additional survey coverage of an area contiguous and to the north and northwest of the BLM survey area approximately 4,000 acres in size was obtained thru survey efforts by ODF during the 2004 and 2005 survey season. This represents all suitable and dispersal spotted owl habitat within a minimum of approximately 0.25 miles of the roads proposed for treatment.

*Spotted Owl Habitat*
The Roadside Hardwood Removal Project proposes to treat approximately 9 miles of road. The vast majority of these miles of road pass through or are in the vicinity (within 0.25 miles) of forested stands considered to be suitable habitat for the spotted owl.

Marbled Murrelet – (FT)
*Designated Critical Habitat*
Critical Habitat is designated to provide for the conservation and eventual recovery of the species. The project areas are located within marbled murrelet designated critical habitat (CHU # OR-02-e).

*Proximity to Known Sites*
With the nearest known occupied marbled murrelet site being approximately two miles from a road segment proposed for treatment, there are no known occupied murrelet sites within the project areas.

*Suitable Habitat and Murrelet Surveys*
Approximately 50% of the BLM land within the Analysis Area (9,529 acres) has potential to be considered marbled murrelet habitat. However, field review of these stands has determined that the vast majority of the these acres contain no suitable nesting platforms and are therefore not considered to be murrelet habitat, or contain just a few platforms and are considered to be very marginal in habitat quality. This is primarily a function of the stands' ages and lack of sufficient crown development; younger stands generally contain lower densities of potentially suitable nesting platforms and these platforms are often of questionable suitability.

A portion of the Dovre Tie Road proposed for treatment that is approximately one mile in length is in proximity to forested stands which are known to contain a few individual trees and/or small groups of a few trees which contain murrelet potential nesting platforms. Protocol surveys at this site were started in 2005 and are scheduled to be completed by August 2006. There is no known additional potential marbled murrelet habitat identified near (within 0.25 miles) any of the other road segments proposed for treatment with the Roadside Hardwood Removal Project.

Bald Eagle – (FT)
The nearest known eagle nest, which is historical in nature, is located approximately two miles from the nearest road segment proposed for treatment. There are no known eagle roosts within the vicinity of the project areas.

Portions of the roads proposed for treatment are directly adjacent to, within 0.25 miles, or within a 0.5 mile line-of-sight distance of forested stands considered to be suitable eagle habitat.

The affected environment for the bald eagle is as described in Project 1 (2.3.2). This confluence is located near the western edge of the Analysis Area approximately 1.0 miles east of the nearest road segment proposed for treatment, the lower end of the Hoag Pass Road.

Environmental Effects

#### *4.3.2.1 Alternative 1: Proposed Action*

Northern Spotted Owl - (FT)

*Designated Critical Habitat*

The Roadside Hardwood Removal Project is located within designated critical habitat for the spotted owl. Due to the nature and scope of the project including the projects design features to minimize impacts, and nature of the habitats impacted (roadside hardwoods) implementation of the project would be of no effect upon spotted owl critical habitat.

*Known Sites and RPAs*

The nearest known spotted owl site, the Elk Creek site, is located approximately 2.0 miles from the nearest road proposed for treatment. The proposed project would have no impacts upon this known site. Portions of Hoag Pass Road and Dovre Tie Road which are proposed for treatment under this project are located within the Elk Creek Spotted Owl RPA. Implementation of the project is consistent with the document entitled *Delineation and Management of Reserve Pair Areas within Oregon's Northern Coast Range Adaptive Management Area*, dated June 1, 2000.

*Potential for Disturbance*

All suitable and dispersal spotted owl habitat within or within a minimum of approximately 0.25 miles of the roads proposed for treatment units has been or will be surveyed to protocol and found to be unoccupied prior to project implementation.

*Spotted Owl Habitat*

The Roadside Hardwood Removal Project proposes to treat approximately 9 miles of road. The vast majority of these miles of road pass through or are within 0.25 miles of forested stands considered to be suitable habitat for the spotted owl; all of this habitat has been or will be surveyed to protocol. No tree which is currently, potentially suitable as a spotted owl nest tree nor any tree adjacent to a potentially suitable nest tree, would be affected.

Cumulative Effects

No cumulative effects to spotted owls or their habitat have been identified.

Marbled Murrelet - (FT)

*Designated Critical Habitat*

The proposed Roadside Hardwood Removal Project would occur within Designated Critical Habitat for the marbled murrelet (CHU# OR-02-e). The primary constituent elements of murrelet Critical Habitat are (1) individual trees with potential nesting platforms and (2) forested areas within 0.5 mile of individual trees with potential nesting platforms with a canopy height of at least one-half the site-potential tree height. The nature and scope of the project, including the project design features to minimize impacts constituent elements of murrelet habitat.

*Proximity to Known Sites*
With the nearest known occupied marbled murrelet site being approximately two miles from a proposed treatment unit, there are no known occupied murrelet sites within the vicinity of any of the roads proposed for treatment.

*Potential for Disturbance*
All potentially suitable murrelet habitat within a minimum of approximately 0.25 miles of the roads proposed for treatment units has been or will be surveyed to protocol and found to be unoccupied prior to project implementation.

*Suitable Habitat*
Implementation of the Roadside Hardwood Removal Project would not be expected to have any impact upon the suitable habitat within the vicinity of the proposed action. No tree which is currently, potentially suitable as a murrelet nest tree or any tree adjacent to a potentially suitable nest tree, would be affected. With only conifers less than six inches DBH being potentially felled, the project focuses almost exclusively on hardwoods.

Cumulative Effects
No cumulative effects to marbled murrelets or their habitat have been identified.

Bald Eagle - (FT)
*Potential for Disturbance*
Dispersed eagle usage may occur throughout the Analysis Area including the project areas wherever suitable eagle habitat is present; this eagle usage of the area would most probably occur during the late fall or winter months.

The potential dates of operation for the proposed project are such that activities may occur which would generate noise above the ambient level during the eagle breeding season (January 1 to August 31) however there are no known eagle nests within the vicinity of the project and based upon the high visibility of the eagle nests none are expected. As a result of harvesting and potential hauling, the project may generate high activity levels and noise which could displace dispersed foraging, perching or resting eagles; it would be expected that these displaced birds would simply, temporarily relocate to other areas containing suitable habitat and lower levels of activity.

*Habitat Modification*
Based upon the scale and nature of the proposed treatments, including the nature of the habitats to be impacted (roadside hardwood) no short or long-term adverse impacts to eagle habitat are expected.

Cumulative Effects
No cumulative effects to bald eagles or their habitat have been identified.

### *4.3.2.2 Alternative 2: No Action Alternative*
Under this alternative the BLM would not implement the Roadside Hardwood Removal Project.

Under the "No Action" Alternative, the identified beneficial and adverse impacts of the action alternative upon wildlife and/or wildlife habitat would not occur within the identified treatment units at this time.

Cumulative Effects
There are no identified cumulative impacts to wildlife associated with the No Action Alternative.

### 4.3.3 Threatened or Endangered Fish Species or Habitat

Affected Environment

The project is located within the Nestucca Watershed which does not contain any ESA listed or proposed fish species or designated critical habitat.

Environmental Effects

#### *4.3.3.1 Alternative 1: Proposed Action*

As this project is not located in a watershed with proposed or listed species and there is no critical habitat no direct, indirect or cumulative effects would occur.

#### *4.3.3.2 Alternative 2: No Action Alternative*

As this is a no action alternative there would be no change from the current condition.

### 4.3.4 Water Quality

Affected Environment

The proposed action area is in the same general area as Project 1, Commercial Density Management Thinning (See Section 2.3.3). Most of the cut banks and fill slopes are moderately steep (15 to 40%). There are approximately 30 stream crossings along the approximately 9 miles of road, consisting mainly of small headwater streams.

Environmental Effects

#### *4.3.4.1 Alternative 1: Proposed Action*

The proposed action is not expected to alter the current condition of the aquatic system either by affecting the in-stream flows, physical integrity, water temperature, or sediment regime. Since only a small number of trees would be removed there would be no effect on stream flows. There would be no direct alteration of stream channels. Since there would be no removal of targeted trees that are the primary source of shade on streams, there would be no measurable effect on water temperature. All equipment used in the proposed action would be restricted to the existing road surface.

Falling and removing small trees in roadside cut-banks would result in minor, localized surface disturbance. Commercial hauling of hardwoods would be restricted to the dry season of operation on gravel surfaced roads over mainly intermittent streams and a few small headwater perennial streams. The running surfaces on these roads are tightly compacted. Dry season summer hauling is not expected to result in degradation of the running surface. Removing hardwood trees along roadsides should reduce slumping but is unlikely to have any noticeable effect on sediment delivery because most of the soil material falling into ditches would remain there. These actions are therefore unlikely to result in any measurable increase in sediment delivered to streams.

Cumulative Effects

There would be no cumulative effects to this resource, as the effects from the project would be local, and there would be no other uses affecting this resource.

#### *4.3.4.2 Alternative 2: No Action Alternative*

Under the No Action Alternative, no roadside hardwood removal would occur. There would be no short-term increases in sediment delivery to roadside ditches and possible entry into local streams and no long-term reductions in sediment delivery to roadside ditches and possible entry into local streams. The aquatic system would continue at current conditions and trends at these sites.

Cumulative Effects

Under the No Action Alternative there would be no cumulative effects to this resource. There would be no other uses affecting this resource. Current conditions and trends for this resource would continue in the project area until there is another disturbance (e.g., wildfire, windstorm).

### 4.3.5 Invasive, Nonnative Species (Executive Order 13112)

Affected Environment

Botanical surveys for invasive, non-native plant species within the Hoag Pass project area began in June 2004. There are many Priority III invasive species that grow within the project area, including *Cirsium vulgare*, *Cytisus scoparius*, *Senecio jacobaea*, *Rubus discolor*, and *Hypericum perforatum.* These aggressive weed species are prevalent throughout Western Oregon and proliferate easily through vectors such as motor or foot traffic, birds, wind, and water into previously unaffected areas. Because these weed species are present in the project area, seed is readily available for dispersal and germination if favorable conditions such as disturbed soil and increased light are encountered. An appreciable degree of noxious/exotic weed introduction or spread is probable as management activities occur in the project areas.

Environmental Effects

#### *4.3.5.1 Alternative 1: Proposed Action*

Moderate Effect - The removal of hardwoods along the roadside would increase exposure to sunlight and cause soil disturbance as trees are felled and removed from the site. Because noxious/invasive weed species are common along roadsides within the vicinity of this project and they are known to respond positively to exposed and disturbed habitats, it is expected to see an increase in their populations. Mitigating measures such as seeding disturbed areas with native grasses, implementing a roadside vegetation control program (brushing), restricting equipment to the existing road surface, and washing equipment prior to entering the project area would reduce and/or control the invasion of noxious/invasive weed species. Project design features require that all slash less than 6 inches diameter is pulled back at least 25 horizontal feet from the edge of the road bed. This feature reduces the risk of fire and would facilitate roadside weed brushing. Hardwoods greater than 6 inches diameter may be removed commercially as sawlogs, firewood or woodchips, offered to the public as personal-use firewood, and/or left on site as chipped material or Coarse Woody Debris. These alternatives would depend largely on economics and seasonal restrictions such as weather, soil moisture, work-force availability, and/or fire danger; however, certain treatments would promote weed populations more than others. Treatments which would cause greater soil disturbance (such as commercial removal of logs) would advance the establishment of noxious weeds, but would facilitate roadside weed maintenance brushing. Treatments that do not require immediate removal of debris (such as leaving the trees as woody debris or for public personal-use firewood) would result in less ground disturbance but could adversely affect roadside brushing if the wood is left too close to the road.

Cumulative Effects

The analysis area for cumulative effects to noxious/non-native invasive plant species is in the Northern Oregon Coast Range approximately 22 miles south east of the town of Tillamook, Oregon located in the

upper reaches of the Nestucca River watershed. Examples of forest management activities within the affected area that will create soil disturbance and influence the spread of noxious/non-native invasive plant species are, commercial and pre-commercial density management thinning, young stand maintenance, new road construction, road decommissioning, road maintenance, culvert replacements, helicopter landing zones, and OHV (Off Highway Vehicle) trails. Activities that do not necessarily create disturbance but influence the spread of weed seeds include recreational hiking, biking, horseback riding, fishing, and hunting. Other sources of seed dispersal are from wildlife that are either passing through or frequent the area, water movement and wind. Many past and present management activities tend to open dense forest setting and disturb soils therefore providing opportunities for widespread weed infestations to occur. Many, if not all of the weed species identified as Priority III (established infestations) on the Oregon Department of Agricultures (ODA) noxious weed list are present throughout the area. Because they are present in the project area, seed is readily available for dispersal. Most non-native weed species are not shade tolerant and will not persist in a forest setting as they compete for light when tree canopies close and light to the under-story is reduced.

#### *4.3.5.2 Alternative 2: No Action Alternative*

No Effect - Most Priority III species found were located along existing roadways. No appreciable increase in the noxious weed populations identified during the field surveys is expected to occur if no action is taken.

Cumulative Effects

There are no Cumulative Effects associated with the No Action alternative.

### 4.3.6 Soils

Affected Environment

Soils in the general vicinity of this project are similar to those described in the Affected Section of the Density Management Project. Most of the soils where trees would be removed have been altered; either truncated in road banks or covered by additional dirt and rock material in road fills. Most of the road segments in this project have ditches. Shallow slumps, the most common type of slope failure, commonly occur on over-steepened road cuts and are often associated with small trees falling out of the road bank.

Environmental Effects

#### *4.3.6.1 Alternative 1: Proposed Action*

The risk of soil degradation (i.e., loss in soil productivity) resulting from the implementation of the proposed action is low. Falling trees would result in minimal soil disturbance. If the roadside trees are yarded commercially, some minor soil disturbance (compaction/displacement/mixing) and slight soil erosion would be expected. If trees are removed for public personal-use firewood rather than commercially, there would be slightly less ground disturbance. In the long-term, the removal of roadside trees would aid the soil resource by reducing slumping, the most common type of road-cut slope failure in the project area.

Cumulative Effects

No cumulative effects to soil resources would result from the proposed action in the project area. Effects would be contained within the project areas, and there would be no other uses affecting this resource.

#### *4.3.6.2 Alternative 2: No Action Alternative*

Current soil processes and conditions as described in the Soils Affected Environment section would continue to occur based on current conditions. Trees along roadsides would continue to grow, fall over and bring soil and rock material down into ditches and across the road beds.

Cumulative Effects

The No Action alternative would not result in cumulative effect to soil resources.

### 4.3.7 Special Status and SEIS Special Attention Wildlife Species and Habitat

Affected Environment

The affected environment is the same as described in Project 1 (2.3.7).

NWFP Bats

The affected environment for NWFP bats is the same as described in Project 1(2.3.7).

Townsend's Big-Eared Bat - (BS)

The affected environment for Townsend's big-eared bat is the same as described in Project 1(2.3.7).

Environmental Effects

#### *4.3.7.1 Alternative 1: Proposed Action*

Primarily as a result of the nature and scope of the proposed project (include incorporated design features to minimize the potential for adverse impacts) as well as the nature of the habitats impacted (primarily roadside hardwoods), implementation of Alternative 1 of the Roadside Hardwood Removal Project would not be expected to result in the loss of population viability for any Special Status Species that may occur in the project area, or result in the need to elevate their status to any higher level of concern including the need to list under the ESA.

.

Bats (including NWFP bats and the Townsend's Big-Eared Bat)

There are no known bat roosting or hibernaculum sites within the project area.

Bats are known to forage near riparian areas, within open areas including over forest roads, and along forest edges. The Roadside Hardwood Removal project would be expected to a somewhat minor degree, improve the quality of bat foraging habitat by opening up the canopy over the treated forest roads and thus creating or maintaining small openings in an otherwise closed forest canopy.

Cumulative Effects

There are no identified cumulative impacts to bats associated with Alternative 1.

#### *4.3.7.2 Alternative 2: No Action Alternative*

Under this alternative the BLM would not implement the Roadside Hardwood Removal Project.

Under the "No Action" Alternative, the identified beneficial and adverse impacts of the action alternative upon wildlife and/or wildlife habitat would not occur within the identified treatment units at this time. There are no identified cumulative impacts to wildlife associated with the No Action Alternative.

In addition, Alternative 2 would not be expected to result in the loss of population viability for any Special Status Species that may occur in the project area, or result in the need to elevate their status to any higher level of concern including the need to list under the ESA.

Cumulative Effects
There are no identified cumulative impacts to wildlife associated with the No Action Alternative.

## 4.3.8 Fish Species with Bureau Status and Essential Fish Habitat Affected Environment

Affected Environment

See section (2.3.8) for a description of the affected environment for fish species with Bureau Status or Essential Fish Habitat. The nine miles of road covered by this activity, with the exception of one crossing on Fan Creek are not near any SSS or MSA fish species. At the crossing on Fan Creek the species known to be present include coho, cutthroat and steelhead. Other species may be present but distribution is not known.

Environmental Effects

### *4.3.8.1 Alternative 1: Proposed Action*

The potential for effects to either SSS or MSA fish species resulting from this proposed action are very limited. Design features such as implementation during the dry season, requiring any equipment used to remain on the road and no removal of tress that provide shade to stream channels further reduce the potential of impacts. As the trees targeted for removal with this action are hardwoods or very small conifers and their location on road edges effectively precludes their input into stream channels by natural events as such no loss of wood either present or future is anticipated. The generation of sediment in any measurable quantities is not anticipated and due to the distance to any fish species effects, from generated sediments, are not anticipated. The implementation of this action would not elevate concern for SSS or MSA fish species, affect their status or contribute to the need to list under the Endangered Species Act. No Adverse effects to Essential Fish Habitat are anticipated.

Cumulative Effects
Cumulative Effects to this action are the probable reduction of the need for road maintenance, the reduction in road maintenance such as grading further reduces the potential input of road related sediment, a beneficial effect. No other actions would be considered cumulative to this proposed action due to the limited scale of this action.

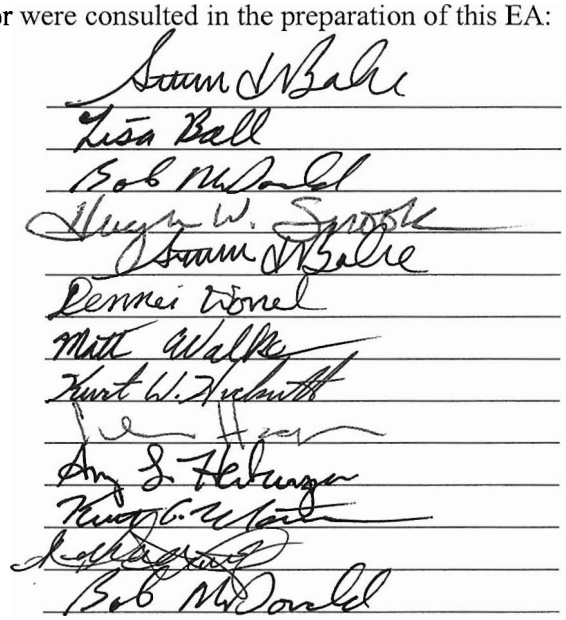
### *4.3.8.2 Alternative 2: No Action Alternative*

As this is a no action alternative there would be no change from the current condition; roadside trees would continue to grow and eventually increase the need for road maintenance including tree removal after wind storms or heavy precipitation or icing events. The current condition would continue with sporadic inputs of small amounts of sediment and additional road maintenance necessary as storms occur.

Cumulative Effects
There are no identified cumulative impacts to fish species with Bureau Status and Essential Fish Habitat associated with Alternative 2.

## 5.0 LIST OF PREPARERS

The following individuals participated on the interdisciplinary team or were consulted in the preparation of this EA:

| | | |
|---|---|---|
| Interdisciplinary team lead; | Steve Bahe |  |
| Writer/Editor | Lisa Ball | |
| NEPA review | Bob McDonald | |
| Silviculturist | Hugh Snook | |
| Wildlife Biologist | Steve Bahe | |
| Soils and Water | Dennis Worrel | |
| Fisheries Biologist | Matt Walker | |
| Botanist | Kurt Heckeroth | |
| Logging Systems Specialist | Carolina Hooper | |
| Engineering | Amy Herburger | |
| Fuels | Kent Mortenson | |
| Outdoor Recreation and Visual Quality | **Debra Drake** | |
| GIS Specailist | Bob McDonald | |

# APPENDIX 1

# PUBLIC COMMENTS TO SCOPING FOR THE HOAG PASS PROJECTS INCLUDING BLM RESPONSES

On April 29 2005, a Scoping Letter along with a copy of the 16 page Hoag Pass Scoping Report and copies of 3 Project Maps (Project Record Document 16) were sent to 49 individuals, organizations and agencies (Project Record Document 17). As a result of this scoping effort, three letters providing comments were received (Project Record Documents 22, 23, 32) and there was one request for a site visit to the project area. As a result of this site visit request, Tony Stein, Coastal Land Use Coordinator with Oregon Parks and Recreation Department visited with Tillamook RA staff in the project area on July 7, 2005. All comments presented in this appendix are direct quotes from the comment letters received, or in the case of the site visit with Tony Stein (OPRD) they are comments captured in the meeting notes (Project Record Document 35).

Project Record Document 32

Jeremy Hall
Oregon Natural Resources Council - Western Field Office
P.O. Box 11648
Eugene, OR 97440

### Thinning in older stands

Comment A: *"Priority should be given to create large trees with deep crowns in the young stands. It is less likely that trees in older stands will respond as well to the thinning as younger stands. As it stands now, more than 40% of the stands slated for thinning are over 80 years old. We encourage you to focus your management activities in those stands less than 80 years old and incorporate precommercial thinning to variable densities in stands between 10-25 years old as well."*

BLM Response: The Hoag Pass projects were developed as a result of a sub-watershed-based analysis process that seeks to inventory and analyze a comprehensive range of management needs for the entire planning area. The process is intended to address a wide range of resource needs and opportunities and to reduce future entries. In the Hoag Pass area, approximately 5,000 acres of forest stands were considered and examined for various treatment opportunities to accelerate the development of older-forest characteristics to meet LSR objectives; approximately 3,150 acres of these forested stands were 80-years-old or older. Through this process, approximately 1,000 acres of forest stands between the ages of 31 years and 96 years were recommended for density management treatment. Similarly, 911 acres of these 80-year-old or older forested stands were recommended for only CWD enhancement treatments through the Fish and Wildlife Habitat Enhancement Project rather than density management. We are certainly not proposing to thin the vast majority of these older stand types within the planning area.

In the Environmental Assessment resulting from this planning effort, there was certainly an emphasis on treating all available and feasible young stands, and in fact stands as young as 31 years are included in the proposed action. However, because the total acreage of density management proposed is quite high, the young stands comprise a modest percentage of the total. Younger trees do have a greater capacity to increase crown depth and maintain stable height-to-diameter ratios than older trees, because more of their potential growth is ahead of them.

However, older stands are also included in the proposed density management action because there are opportunities in these stands to better meet LSR objectives through thinning to increase variability, establish multiple stand layers, increase shade tolerant species, maintain or improve existing crown structure, increase growth rates, and

increase coarse woody debris (CWD). Some of these stands have been thinned in the past, but to a close and uniform spacing. Without treatment at this time, the development of many late-successional forest structural features would occur at a slower rate because the overstory is becoming increasingly dense and uniform. Management of stands over 80-years-old for LSR objectives is supported in the Northern Coast Range Adaptive Management Area by the Northwest Forest Plan and the Salem District Resource Management Plan that tiers to it. The inclusion of older stands meets the purpose and need of the Hoag Pass EA, and meets it over a much greater area than if only stands less than 60 or 80 years were included.

While older stands are included along with the younger stands, the prescription for the older stands recognizes the difference in thinning response. Relatively heavy thinnings (as measured by relative density index) are recommended for young stands because they generally have very good crown ratios and tree stability and would again rapidly increase density by the next entry (estimated at 25 years from now). Mid-seral stands 40-60 years are recommended for moderate thinnings because in some cases height/diameter ratios are poor and sufficient trees must be left for future entries to create CWD. Older mid-seral and late-seral stands are recommended for moderate to light treatment in order to retain about 40 live trees per acre for future CWD and abundant large-diameter trees though gaps in these stands would be opened to allow understory development. Retention of 40+ large trees per acre causes the relative density index to remain relatively high.

Precommercial thinning in stands from 10- to 25-years-old is also planned to occur in stands in the Hoag Pass area; this pre-commercial thinning work is not contained within this EA, (except for the case of cumulative impacts analysis) but rather is included within the programmatic Categorical Exclusion for Young Stand Management. An active program of variable-spaced density thinning within these younger stands is being implemented by work conducted under service contracts.

Comment B: *"Detail how each older stand is deficient in older forest structure and the design of a monitoring plan to see how these stands respond following logging regarding various indicators of old forest structure."*

BLM Response: Older stands identified for treatment with the Hoag Pass Density Management Project are deficient in one or more characteristic of late seral forests. These features include structural variability composed of multiple canopy layers, shade tolerant trees species, and/or large accumulations of coarse woody debris spread across all decay classes.

Currently, the stands are quite uniform in tree size, spacing, species, and age. About 1,000 acres of older stands were thinned in the 1960's and 1970's, but the light and uniform thinning tended to further reduce variability. There are very few gaps in the stands that have allowed open-grown trees, and density is generally quite high. Understory in these stands is very limited. Only 2 stands over the age of 80 years, totaling 38 acres, have more than 20 understory trees per acre, and sampling in most stands found no understory. Similarly, only 4 stands over age 80, totaling 49 acres, have shade-tolerant understory. Sampling in these stands found only 1-4 trees per acre of western hemlock or noble fir. CWD levels in stands over 80 years currently average 2,884 cubic feet per acre, composed of an average of 1,584 cu. ft of snags and 1,300 cu. ft of downed wood. This is far less than the target range of 3,200-5,940 needed.

Reducing competition through density management in stands over 80 years is expected to result in modest gains in diameter growth, and since the trees have attained most of their height growth, increased crown depth would primarily occur from epicormic branching. Meeting objectives of increasing variability, horizontal and vertical diversity, species diversity, understory development, and coarse woody debris levels through density management and CWD creation are relatively certain.

Monitoring of tree growth is not planned in these units. Implementation monitoring would be done to ensure that structural changes occur as planned. This would consist of monitoring marking, harvesting, and reforestation of created openings of one acre in size.

## Variable spacing

Comment C: *"We strongly support variability in spacing and would like to see details in the EA about the prescriptions used to make the spacing of leave trees variable between and among stands."*

BLM Response: Much of the detail included in the prescription and the report can be found in the EA file, but the general approach for increasing variability can be found in the EA. Variability between stands would result from stands that would remain untreated, while others are treated, from untreated stream buffers within stands, from prescribed higher densities within portions of the Riparian Reserve outside the stream buffers, and from the range of prescriptions applied to stands within the project.

Variability within treated areas would be created using prescription parameters at the tree level and at the stand level. At the tree level, leave trees would be selected by diameter, tolerance to Swiss needle cast, crown size, species (only selected Douglas-fir would be removed except in one unit), presence of defect or wildlife use, presence of laminated root rot. Spacing or basal area would not be used to determine leave trees, and so a high level of variability is expected to result, since these factors are somewhat randomly occurring. Variability would also be increased by girdling or topping trees for coarse woody debris – up to 8 trees per acre would be treated, and they would generally be clumped. The arrangement and distribution of CWD trees is another means to increase variability at the tree level.

At the stand level, variability would be promoted by established (laid out) 'patch cuts' (gaps) and leave islands (skips). 'Patch cuts' or gaps from .5 to 1.0 acre in size, totaling approximately 18 acres, are proposed in 11 units, and untreated 'leave islands' of the same size, are proposed totaling approximately 14 acres in 8 units (units that also contain patch cuts). Patch cuts would be located to release existing tree saplings and large-crowned trees, to treat root-rot disease centers, and to avoid proximity to roads and landings. Within the patch cuts, 8-12 trees per acre would be left, generally the largest available. Many of these may later be cut, topped or girdled for coarse woody debris. Leave islands would be located to protect selected concentrations of snags and/or logs, to increase coarse woody debris recruitment needs along stream influence zones, and where features or stand structure would benefit from higher tree density.

Comment D: *"Those forest that are already complex and those that are beginning to diversify and self-organize should be conserved, while allowing natural processes (including disturbance) to flourish. Those forests that have been simplified by past management such as dense young plantations that resulted from past clearcutting or salvage logging should be considered for active management to restore biocomplexity."*

BLM Response: These comments are well-taken. The approach taken in the development of the proposed density management project is consistent with your comment to avoid thinning forest that are already complex and those that are beginning to diversify and self-organize. However, to limit proposed density management to only dense young plantations would meet the purpose and need of the EA to only a very limited extent, as discussed in the responses above. Additionally, those stands that have been simplified by past management such as dense young plantations that resulted from past clearcut harvests are considered for active management as you suggest through our pre-commercial thinning program.

## Use of Research and the Current Science

Comment E: *"There are literally dozens of studies that discuss the value of thinning for diversity. In the EA, please detail how research informed the prescriptions"*

BLM Response: As Andy Carey has pointed out in several of his presentations, variable-density thinning creates a wider array of niches than conventional thinning. Where thinning was done to various densities, but rather uniform

within the treatments, it is apparent that the resulting stand structure would have much different if the same number of trees per acre had been arranged in a more variable manner - giving some trees more room to grow and other trees less room, resulting in a more diverse understory as well. The variation in overstory tree spacing, which results in a variable understory, including gaps, is quite apparent in Coast Range old-growth stands. Therefore, we also feel that variable-density thinning is the preferred thinning method. Current research used to formulate the prescription can be found also in the bibliography for the Hoag Pass Silvicultural Prescription, the specialists report, and the Environmental Assessment itself. Copies of the former two documents are available on request.

### Retention of large and remnant trees and trees with defect.

Comment F: *"Leaving trees with the deepest crowns as well as those trees with defect is absolutely critical.*"

BLM Response: We agree. Trees that exhibit these characteristics are designated for retention in the "marking guide" of the silvicultural prescription for the Hoag Pass project.

### Clumps and Gaps

Comment G: *"One of the most difficult aspects of variable density thinning to implement has been the creation of gaps. Gap creation is very important, but gaps should be thought of as low retention thinning, not clearcuts. We will vigorously oppose gaps that leave no trees, and hope that you will retain between 20-30 trees per acre in the gaps."*

BLM Response: We agree that retaining overstory trees within patch cuts is valuable. Since one purpose of the openings is to help regenerate conifer, we feel there must be a balance that allows successful regeneration and long-term growth of additional trees while providing the structure afforded by overstory trees. The prescription proposes to leave 8-12 trees per acre within the patch cuts, generally the largest trees available. If determined appropriate, some of these retention trees and/or trees located along or adjacent to the outside edge of the gap may later be cut, topped or girdled to help meet Coarse Woody Debris objectives as well as to help maintain the opening. Retaining 20-30 trees per acre would compromise the regeneration objective considerably. Since the dominant trees are 19" diameter or above, 20-30 trees per acre would represent a high degree of crown closure and competition, more than would allow long-term growth of an additional stand layer. Patch cuts are only proposed in older stands, because it was considered less important at this time to promote the development of an understory in stands currently less than 60-years-old.

Comment H: *"We hope you will be designing "skips" along with gaps. Unthinned patches surrounded by thinned forests to various densities serve as cover for many species that prefer heavy crown cover. We urge you to leave the same number of total acres in skips as well as gaps.*"

BLM Response: In general, within the Hoag Pass project "Skips" would be created in units where gaps are prescribed. "Skips", totaling 14 acres are included to complement "gaps", totaling 18 acres, with the exception of units that have a high degree of stream buffers interspersed. In some units, the stream buffers break up contiguous "blocks" of density management and "skips" would be hard to place or redundant. In those units, the untreated stream buffers are considered to be analogous to "skips" because they create a similar pattern and provide a similar function.

Comment I: " . . . *the most important issue in the placement of these gaps is to get them away from roads and landings. As a general rule, not gap should be within 200' of any road. Roads and landings may have some of the functions of gaps (mostly regarding reducing light competition) but heavy impacts to soils and the proximity to invasive weed seed sources do not make them functional gaps structurally over time. We urge you to leave heavy retention areas near landings so that as many leave trees as possible remain between roads and gaps. Likely many*

*leave trees near skyline landings will have to be taken for operation reasons. But it is very important not to have yarding corridors connect landings, roads, and intentionally created gaps to result in very large gaps. We urge you to lay out yarding corridors before you lay out gaps to avoid this. Keeping the yarding corridors as narrow as possible decreases this problem as well. Skips and gaps should not be located at the edge of units, but be surrounded by thinned portions of the stand to promote horizontal diversity.*"

BLM Response: Since gaps would be designated on-the-ground in the design process, there is a high level of control on placement. Your comments will be considered and incorporated into the design and placement of gaps to the extent feasible.

**Retention of Course Woody Material**

Comment J: *"We encourage BLM to assign some targets to retention of trees with "elements of wood decay as described in DecAID.*"

BLM Response: Trees that exhibit elements of wood decay, defect, or evidence of wildlife use are to be designated for retention under the silvicultural prescription for the Hoag Pass project. No target is assigned because sampling is not sufficient to determine their exact occurrence in each unit. Coarse woody debris target levels would be met by girdling, felling, or topping trees of sufficient size and quantity to meet per acre target levels on a unit basis. Live trees with elements of decay, as they occur, would be above those targets.

Comment K: *"We are also concerned about the loss of snags for safety and operation reasons. This likely is a problem that is easily fixed by offering full protection for large, old snags and allowing more flexibility for felling small, hard snags. . . . While generally your snag recruitment and retention guidelines are sound, they allow for felling snags that interfere with operations.*

*Any prospective benefits to complexity and diversity accomplished by thinning these stands will be negated by the certain loss of the most important structural components of older, complex stands. Protecting snags except where safety is an issue should no longer be used as a blanket loophole to cut existing snags. It must be noted that OSHA revised the federal Logging Standard (29 CFR 1910.266) in order to clarify its intent that danger trees and snags may be avoided, rather than being felled. The revised rule allows some discretion in determining the hazard area around a danger tree, by allowing work to commence within two tree lengths of a marked danger tree, provided that the employer demonstrates that a shorter distance will not create a hazard for an employee (OSHA Logging Preamble, Section V)."*

BLM Response: To state that concerns over safety are being "used as a blanket loophole to cut existing snags" is a dramatic overstatement. The project has been designed to meet project-specific CWD objectives as well as the Standard and Guides of the NWFP and Salem RMP that require the retention and protection of existing CWD (both down wood and snags).

To help ensure meeting these objectives and requirements, the project includes several design features that minimize the potential for adverse impacts to existing snags and where impacts can not be avoided, mitigation measures have been incorporated. The marking prescription would contain a provision that includes reserving two or three green trees in the immediate vicinity of higher quality snags to add some protection and help ensure that they don't get damaged or knocked over during logging operations. An additional potential benefit from this design feature includes lowering the probability that they are deemed a safety hazard by a feller needing to work in their immediate vicinity. BLM also must approve all skid trails and cable yarding corridors; the presence of high quality larger snags within skid trails and cable yarding corridors would be one of the factors that the contract administrator would consider in approving cable yarding corridors.

However, even with these incorporated design features to minimize adverse impacts to snags it is recognized that there would be snags felled for safety concerns or inadvertently knocked over during logging operations.

Therefore, we have incorporated mitigation measures such as the active creation of snags within the treatment units and the retention of green trees that have significant defect such as hollow cavities or dead or broken tops – habitat features utilized by and benefiting many of the same species as snags.

Comment L: *"The ROD clearly states that the 240 linear feet of logs per acre greater than or equal to 20 inches in diameter standard is to be used until better, vegetation-type specific standards are developed. This model is currently available. BLM should use the DecAID decision support tool and consider all the many values of snags and down wood . . ."*

BLM Response: The strategies and target levels for coarse woody debris used in preparation of the action alternatives in the Hoag Pass EA are those set forth in the Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area (USDA Forest Service and USDI Bureau of Land Management 1998).

The Standard and Guide that is mentioned in the comment (240 linear feet of logs per acre greater than or equal to 20 inches in diameter standard) is applicable to regeneration harvests in the Matrix Land Use Allocation; the Hoag Pass Project is a Density Management treatment within the LSR LUA.

Comment M: *"BLM must develop design criteria to protect all large diameter legacy snags regardless of height or decay class."*

BLM Response: The strategies and target levels for Coarse Woody Debris used in preparation of the action alternatives in the Hoag Pass EA are consistent with current management direction. Provisions to minimize impacts to snags, especially larger snags, have been included within the project's design features to help "retain and protect existing CWD". (See also BLM Response to Comment K above)

### New road construction

Comment N: *"We do recognize that sometimes new road construction is necessary to provide access to stands that would otherwise not have access for yarding and hauling. However, the ecological costs of building the road must be outweighed by the benefits of setting significant acres of young dense plantations on a new trajectory. In the EA, please provide detail about how long each spur is, whether cut banks will be cut on any portion of the road, and how many acres to which each spur provides access that the existing road system does not provide."*

BLM Response: According to the Salem District BMPs (Best Management Practices) for locating roads, roads would generally be placed in locations that minimize the heights of cut banks. However, in order to design a road with an outslope, also a BMP for road construction on roads with less than an 8-10 percent gradient, roads that are located on stable ridgetops would need to be placed just below the top of the ridge often resulting in a small cut bank; this generally allows for a road design that includes an outslope. An outslope allows water to rapidly move off the road surface, and minimizes soil displacement, rutting and reduces the cost of road maintenance. BMPs are located in Appendix C of the Salem District RMP.

As per your suggestion, a table (Table 2) has been included in the EA which displays the approximate length of each newly constructed spur road as well as the approximate number of acres accessed by each spur.

### Fish and Wildlife Habitat Enhancement Project

Comment O: *"Our only question here is where the large diameter logs will come from for the work."*

BLM Response:

Largely due to the lack of access, all of the logs to be used in the Fish Habitat Enhancement work would be from "on-site" trees; trees would be felled directly into the stream segments from adjacent stands. Selection of these trees would be consistent with the project descriptions contained within the appropriate USFWS programmatic consultation.

## Roadside Hardwood Removal Project

Comment P: *"Will all yarding activities be limited to the existing road system? If equipment for this project is limited to the existing road system, we would have no concerns about this project."*

BLM Response: Yes, all equipment used in associated with implementation of the Roadside Hardwood Removal Project would be limited to the existing road surfaces.

Project Record Document 22

Eric Nigg - North Coast Basin TMDL Coordinator
Oregon Department of Environmental Quality
2020 SW 4th Avenue, Suite 400
Portland, OR 97201

## Riparian Buffer Widths

Comment Q: *"We do have some concerns about the setbacks from streams that will be maintained, the potential frequency of stream crossings in yarding operations, and the overall potential for cumulative sedimentation of these streams following these and future operations. The setbacks defined for riparian reserves are likely protective of necessary shade for limiting solar insolation along fish-bearing streams. We do not see the logic behind applying different setbacks to fish-bearing and non-fish-bearing streams. In general, this appears to be based on increasing the amount of harvest rather than response to a lower risk. Non-fish-bearing streams carry sediment and heat downstream to fish-bearing streams, and the intent of the TMDL was to limit these pollutants in all surface waters of the subbasin. We suggest the plan should apply the proposed 100-foot no-harvest buffer to both non-fish-bearing streams and fish-bearing streams."*

BLM Response: We believe there is a strong rational for applying differing widths of no-harvest buffers along fish-bearing and non-fish bearing streams. This logic of having different setbacks is not based upon increasing harvest levels as you suggest. Rather it is based upon precedence and the fact that these two categories have different characteristics, functions, and sensitivities to management actions.

> **Precedence**. The authors of the Northwest Forest Plan (FEMAT, 1993) recognized three categories of streams: permanently flowing fish-bearing rivers; permanently flowing non-fish-bearing streams; and intermittent streams. Under the FEMAT, the width of Riparian Reserves varied in width depending on the size of the waterbody and its ecological importance.
>
> **Fish-bearing streams are ecologically and functionally different from non-fish-bearing streams.** Most fish-bearing streams are perennial, medium to large channels (>10 feet width), have mean annual flows of more than two cubic feet per second, and have low to medium channel gradients. They are typically 3rd order or larger channels and have >250 acre drainage areas. By contrast, most non-fish-bearing streams are intermittent or ephemeral, have small channels (<10 feet width) with mean annual flows of less than two cubic feet per second. They are typically 0, 1st or 2nd order channels and have small drainage areas (<250 acres). If they are perennial, they tend to be steeply graded, entrenched, and highly constrained by steep hillslopes. Fish-bearing streams are inhabited or potentially inhabited by fish if

human created barriers or obstructions are either removed or made passable; non-fish-bearing streams are not inhabited by fish and provide water, food and nutrients to a downstream fish-bearing stream.

**Sensitivity to management actions.** Non-fish-bearing streams in general are less sensitive to management actions than fish-bearing streams. Non-fish-bearing streams are typically smaller in size, are intermittent or ephemeral, and are not inhabited by fish. Disturbances that could affect non-fish bearing drainages may not be felt downstream or are greatly diminished. Cumulative downstream effects of increased temperatures in headwater tributaries have not been documented.

We believe that the proposed streams buffers are appropriate to protect and enhance stream conditions (i.e., stream shading, bank stabilization, and sediment).

**Stream shading.** Current stream temperature would be maintained. The area of shading needed to maintain stream temperature diminishes with steepness of side slope (topography) and decreasing channel width. Given that non-fish bearing streams have smaller channels and are commonly entrenched and constrained by steep hillslopes, non-fish bearing streams require smaller streamside buffers to provide sufficient stream shading.

The primary shade zone for perennial streams in the project area is 20 to 60 feet. This area provides shade during the critical period from 10:00AM to 2:00PM and would remain intact. Thinning the secondary shade zone would be expected to reduce the current canopy closure to an average of approximately 50% (40% - 60%), which would be sufficient to maintain existing stream temperature.

**Bank stabilization.** Based upon unit design and our logging plan there would be a small number of cable corridors that would cross streams. In general there would be a 50 ft minimum streamside "no-harvest" buffer. During the dry season (generally June 1 - October 15), logs would be fully suspended within 25 feet of designated stream channels; if yarding occurs outside of the dry season, logs would be fully suspended within 50 feet of stream channels. These measures would be sufficient to maintain bank stability on all streams within the project area.

**Sediment.** Suspended sediment and turbidity are generally quite low in the upper Nestucca watershed. As a result of restoration efforts and current management practices, sediment loads are much different now from the past, when the Nestucca River was listed for water quality impairment. Recent data compare favorably to current targets for substratum sediment composition.

We believe that minimum 50 ft minimum stream-side "no-harvest" buffer is sufficient to protect water quality water. Non-fish-bearing streams have a smaller buffer because they have lesser concerns for sedimentation risks given the project design criteria and risk to beneficial uses. Essentially all of the 50 to 100 feet area adjacent to non-fish bearing streams that would be harvested would be cable or helicopter yarded. Cable yarding in the lower hill slopes typically results in only minor ground disturbance. Very little ground disturbance would be expected from helicopter yarding. Most of the sediment produced from timber harvesting would travel short distances before being trapped by duff, woody materials or other obstructions. Short-term, localized increases in stream sediment may occur as a result of timber harvesting. However, these increases in stream sediment are unlikely to be measurable and would likely be insignificant (i.e. not affect fish or fish habitat downstream).

## Corridor Spacing Over Streams

Comment R: *"Our second concern is the frequency of yarding corridors through riparian reserves and across streams. There is no language in the plan that limits these crossings or suggests they should be avoided if possible. These clearings may be a significant source of sediments to streams if they are 12 feet wide or more and occur at*

*intervals of 100 feet as suggested in the plan. We suggest some requirements to maintain understory vegetation in an undisturbed state where possible."*

BLM Response: Based upon unit design and our logging plan there would be few yarding corridors that would cross streams. Of the approximately 921 acres proposed for timber harvest, located in twelve different sections within the Nestucca watershed, there would be fewer than 20 yarding corridors that would be expected to extend across streams. All or nearly all of these streams are small (average bankfull width is less than 10 feet) with little or no flow in the summer.

Cable yarding would result in relatively little ground disturbance (approximately 5% of the harvested area), mainly minor gouging and compaction in narrow strips along the corridors concentrated on the upper upland slopes. All cable yarding would be accomplished with at least one-end suspension. Because most of the streams are entrenched and constrained by steep hillslopes, most of the inner riparian areas would receive full suspension. Most cable yarding would occur during the season when there is smaller risk of erosion. During the dry season (generally June 1 - October 15), logs would be fully suspended within 25 feet of designated stream channels; if yarding occurs outside of the dry season, logs would be fully suspended within 50 feet of stream channels. Any trees cut in the "no-harvest" buffers would be left on site to augment CWD. As a result, the existing ground cover within the corridor would remain undisturbed and is expected to filter any sediment displaced by unsuspended logs before it can reach the streams.

Project Record Documents 23 and 35

Tony Stein - Coastal Land Use Coordinator
Oregon Parks and Recreation Department
5580 South Coast Hwy
Newport, OR 97366

### Scenic Waterways

Comment S: *"It appears that most, if not all, of the proposed activities in the Hoag Pass Project meet the standards established for specific segments of the Nestucca River Scenic Waterway. However, from the report and the additional map you have provided, it is difficult to determine if the river views at specified locations will be affected to any degree by each of the proposed activities. I would request that we visit any sites with potential impacts and discuss and scope out the proposed actions."*

BLM Response: As per his request and a result of the Nestucca River State Scenic Waterway designation, which falls under the jurisdiction of the Oregon Parks and Recreation Department to administer, Tony Stein, Coastal Land Use Coordinator with Oregon Parks and Recreation Department visited with Tillamook RA staff and was given a field tour of the project areas on July 7, 2005.

Below is a summary of Mr Stein's comments and concerns as captured in the meeting notes from that field tour.

### Fisheries and Wildlife Habitat Enhancement Project

Tony Stein's main concern with this project involves that portion of the project where trees would be felled into the main stem of the Nestucca.

Comments or Concerns to be aware of:

- Steep banks enable high delivery potential.
- Transport zone.

- Some areas appear to have a limited flood plain area.
- Would rather have trees pulled over than felled.
- Cut those stumps that would be visible from the stream very low in an attempt to make them less visible.

## Density Management Project

Mr Stein had few concerns with the Density Management Project. Given the full two-site-tree no-harvest buffer (~440 feet) on the mainstem of the Nestucca and the fact that the project is a thinning which depending upon stand age and condition, would generally maintain a 40% to 60% canopy closure, he didn't believe the thinning units themselves would compromise visual resources. Largest potential for impacts on State Scenic Waterway values resulting from the Density Management Project would involve the preparation and use of the Davidson Rock Pit as a helicopter log landing.

Comments or Concerns:

- If possible, prune or top trees between the Nestucca road and the Davidson rock pit, and along the short access road from the pit to the east that we are likely going to be reopening. Talk to the helicopter pilots or purchaser to determine what they really *need* removed. Cut the trees we *need* to cut, but try to keep as many as possible for a visual buffer.
- Within and near the Davidson rock pit, replant new road construction and areas where trees have been removed with large planting stock trees at completion of project.
- Send Oregon Parks and Recreation Department a copy of the "Rehabilitation Plan" for the Davidson rock pit site should one be developed as we have discussed at previous IDT meetings.
- If it should need to be moved or removed in order to allow the logging operations, consider replacing the existing earthen berm along the base of the rock face within the Davidson rock pit. As currently situated this berm helps eliminate the drastic lines.

## Roadside Hardwood Removal for Road Maintenance

Mr Stein's only concern with this project involves that portion of the project area where trees along the lower portion of Hoag Pass Road, flanking the bridge over the Nestucca, are proposed to be felled. About 50 feet on either side of the bridge and perhaps around the first corner extending to the south of the bridge - consider pruning trees instead of totally removing. Leave as much vegetation buffer within this area as possible; if allowable make this area a no touch for vegetation removal.

# APPENDIX 2
# ENVIRONMENTAL ELEMENTS
Environmental Assessment Number OR-086-06-05

In accordance with law, regulation, executive order and policy, the interdisciplinary team reviewed the elements of the human environment to determine if they would be affected by the alternatives described in Chapter 2 of the EA (environmental assessment). The following two tables summarize the results of that review. Those elements that are determined to be "affected" will define the scope of environmental concern, Chapter 3 of the EA.

**Table 1. Critical Elements of the Environment.** This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| **Critical Element of the Human Environment** | **Status**<br>**1/ Not Present**<br>**2/ Not Affected**<br>**3/ Affected** | **Interdisciplinary Team Remarks**<br>**1/ If not affected, why not?**<br>**2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm** |
|---|---|---|
| Air Quality<br>(Clean Air Act) | Not Affected | **Project 1** - The proposed Density Management Thinning has the potential to create slash and raise the fire hazard associated with landings, along roads, private property lines, and young plantations in the treatment areas. Depending on the size of the landings, or the accumulation of slash in these other potential high fire risk areas, burning may be conducted to reduce the accumulation of slash in these areas. Since burning would be conducted in accordance with the *Oregon State Implementation Plan* and *Oregon Smoke Management Plan* the impact of smoke on air quality is predicted to be local and of short duration. As such, the proposed action would have no adverse impact on air quality and would comply with the provisions of the Clean Air Act. There would be no difference to air quality standards resulting from any of the three action alternatives.<br><br>**Project 2** - The Fish and Wildlife Habitat Enhancement Project would slightly increase the amount of slash within the treatment areas, however, these accumulations would not be expected to result in an increase in fire hazard on the project level scale and the change would not be measurable on the watershed scale. Since no burning is recommended, the proposed action would have no adverse impact on air quality and would comply with the provisions of the Clean Air Act.<br><br>**Project 3** – The Roadside Hardwood Removal for Road Maintenance Project has the potential to create slash and raise the fire hazard associated with landings and along roads in the treatment areas. Design features require slash less than 6 inches in diameter to be pulled back at least 25 horizontal feet from the edge of the road bed. All slash greater than 6 inches diameter would be removed from the road prism, and the resulting depth of slash would not exceed 3 feet. To achieve this scattering and/or bucking may be required. Since no burning is recommended the proposed action would have no adverse impact on air quality and would comply with the provisions of the Clean Air Act. |

**Table 1. Critical Elements of the Environment.** This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| **Critical Element of the Human Environment** | **Status**<br>**1/ Not Present**<br>**2/ Not Affected**<br>**3/ Affected** | **Interdisciplinary Team Remarks**<br>**1/ If not affected, why not?**<br>**2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm** |
|---|---|---|
| Areas of Critical Environmental Concern | Not Affected | **Project 1** - The proposed Density Management Thinning could potentially use existing roads as haul routes in the Nestucca River and the Sheridan Peak ACECs. This would cause no adverse impacts to the vegetation or scenic qualities within those areas. Proposed project falls within the management guidelines of the current ACEC management plan.<br><br>**Project 2** – Portions of the Fish and Wildlife Habitat Enhancement Project areas are within the Nestucca ACEC. Protection and/or enhancement of wildlife resources comply with management objectives within the Nestucca River ACEC Management Plan.<br><br>**Project 3** – A portion of the Roadside Hardwood Removal for the Road Maintenance Project occurs within the Nestucca ACEC Primary zone located along the first ¼ mile on Hoag Pass Road. Some hardwood removal is acceptable according to management action #12 of the ACEC Management Plan dated May 30, 1984. No impacts to fisheries, wildlife, and recreation or plant species are expected. |
| Cultural, Historic, Paleontological | Project 1: Not Affected<br><br>Project 2 & 3: Not Present | **Project 1** - There are three known cultural resource sites (SHS 125 and OR0874) located within or near the general project area. Site SHS125 (Yamhill-Tillamook Trail) is not observable on the ground within the proposed density management units and as such would not be affected by the proposed action. The other site (OR0874) was determined not to require protection as it does not contain information that would contribute significantly to our understanding of Coast Range history based upon the following: lack of physical integrity; lack of associated artifacts; and limited research potential (Cultural Resource Assessment, June 2, 2003). Since the proposed action occurs in the Coast Range, the survey techniques are based on those described in Appendix D of the *Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land Management in Oregon*. The Coastal Range Inventory Plan only requires post harvest surveys based on slope. As such, surveys would not be conducted until the density management harvest activity is completed. Furthermore, pursuant to the August 1998 protocol for managing cultural resources on lands administered by the BLM in Oregon, that portion of the proposed action that does not involve new ground disturbance (CWD creation and haul route maintenance) is considered to be an exempt undertaking. If cultural resources are found during the implementation of any portion of the proposed action, the project may be redesigned to protect the cultural resource values present, or evaluation and mitigation procedures would be implemented based on recommendations from the District Archaeologist. |
| Native American Religious Concerns | Not Present | There were no Native American religious concerns associated with any of the three proposed projects identified during the public scoping period. |
| Prime or Unique Farm Lands | Not Present | There are no Prime or Unique Farm Lands within the three proposed project areas. |

**Table 1. Critical Elements of the Environment.** This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| **Critical Element of the Human Environment** | **Status**<br>**1/ Not Present**<br>**2/ Not Affected**<br>**3/ Affected** | **Interdisciplinary Team Remarks**<br>**1/ If not affected, why not?**<br>**2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm** |
|---|---|---|
| Flood Plains (Executive Order 11988) | Project 1: Not Present<br><br>Project 2: Not Affected<br><br>Project 3: Not Present | **Project 1** - There are no Flood Plains within the Density Management projects proposed project area.<br><br>**Project 2** - A small area of the Fish and Wildlife Habitat Enhancement treatments area would take place within Flood Plains. The proposed action, however, does not involve occupancy and/or modification of flood plains, and would not increase the risk of flood loss. As such, the proposed action is consistent with Executive Order 11988.<br><br>**Project 3** - There are no flood plains within the proposed hardwood falling project areas. |
| Threatened or Endangered Plant Species or Habitat | Not Present | **Project 1** - Botanical surveys were completed in August 2004. Target species included species listed under the Endangered Species Act; no listed species were found.<br><br>**Project 2** - Botanical surveys were completed in July 2005. Target species included species listed under the Endangered Species Act; no listed species were found.<br><br>**Project 3** - There are no known T/E plant species or habitats in the proposed project area. |

**Table 1. Critical Elements of the Environment.** This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| **Critical Element of the Human Environment** | **Status**<br>**1/ Not Present**<br>**2/ Not Affected**<br>**3/ Affected** | **Interdisciplinary Team Remarks**<br>**1/ If not affected, why not?**<br>**2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm** |
|---|---|---|
| Threatened or Endangered Wildlife Species, Habitat and/or Designated Critical Habitat | Project 1: Affected | **Project 1** - All of the suitable spotted owl and marbled murrelet habitat within 0.25 miles of the Density Management project areas, including haul routes to paved roads, has been or will be surveyed to protocol. The Density Management project would modify dispersal habitat for the spotted owl, and suitable habitat and Designated Critical Habitat for both marbled murrelet and spotted owl. Both short-term adverse impacts and long-term beneficial impacts are associated with these habitat modifications. There would be incidental loss of current snag habitat from the logging operation although all snags that are felled or knocked over would be retained on site to augment down wood levels; a 20-30 year interruption of the natural snag recruitment process (suppression mortality) that would limit woodpecker populations and thus cavity development. Cavities are very important to northern flying squirrels, the principle prey item for spotted owls in this area. The project would be expected to accelerate the development of some late-successional forest structural features including several critical elements of spotted owl and marbled murrelet habitat. There is a potential for disturbance to bald eagles during the breeding season along suitable foraging streams. The unit of measure for impacts to spotted owl and marbled murrelet as a result of habitat modification is acres modified and a narrative discussion; the unit of measure for disturbance to bald eagles is a narrative discussion. Design features that would help minimize or mitigate adverse impacts, include the creation of snags and down logs to help offset the adverse impacts to CWD habitat, as well as numerous additional features contained within the silvicultural prescription including recommended tree spacings, cutting limits, attention to canopy closure, and retention of trees with defect and other characteristics desirable to wildlife. Cumulative impacts to spotted owl dispersal habitat would be expected as a result of the Density Management Project however they are not considered to be significant based upon the facts that the project would not remove any of the treated stands from a condition to function as dispersal habitat and there would be an adequate amount of untreated habitat within the Analysis Area that is in a condition to facilitate owl dispersal.<br>**Project 2** - All of the suitable spotted owl and marbled murrelet habitat within 0.25 miles of the Fish and Wildlife Habitat Enhancement project areas has been or will be surveyed to protocol. The project would be expected to accelerate the development of some late-successional forest structural features including several critical elements of spotted owl and marbled murrelet habitat. There is a potential for disturbance to bald eagles during the breeding season along suitable foraging streams. The unit of measure for impacts to spotted owl and marbled murrelet as a result of habitat modification is acres modified and a narrative discussion; the unit of measure for disturbance to bald eagles is a narrative discussion. Design features that would help minimize negative impacts, include the retention of trees with defect and other characteristics desirable to wildlife.<br>**Project 3** - All suitable spotted owl and marbled murrelet habitat within 0.25 miles of the hardwood removal project has been or will be surveyed to protocol. No impacts to habitat. Slight potential for bald eagle disturbance. |
| | Project 2: Affected | |
| | Project 3: Affected | |

**Table 1. Critical Elements of the Environment.** This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| **Critical Element of the Human Environment** | **Status**<br>**1/ Not Present**<br>**2/ Not Affected**<br>**3/ Affected** | **Interdisciplinary Team Remarks**<br>**1/ If not affected, why not?**<br>**2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm** |
|---|---|---|
| Threatened or Endangered Fish Species or Habitat | Project 1: Not Affected<br><br>Project 2 &3: Not Present | Project 1 – Haul is the only activity located within a watershed with a threatened fish species; Upper Willamette steelhead is located within Willamina Creek. This activity would not affect Upper Willamette steelhead. Critical habitat for Upper Willamette steelhead is not located within the same 5th field watershed as this project therefore it would not be impacted. |
| Hazardous or Solid Wastes | Project 1: Not Affected<br><br>Project 2 & 3: Not Present | Project 1 – The only identified Hazardous or Solid Waste sites within the proposed project areas includes waste asphalt material within and/or near the Davidson rock pit – an area which is considered likely to be used as a helicopter log yarding area. This waste material would be disposed of in an appropriate manner. |
| Water Resources (including ground and surface water quality) | Project 1: Affected<br><br>Project 2: Affected<br><br>Project 3: Affected | The project is located primarily within the Nestucca watershed, a watershed which has been identified to have water quality problems (ODEQ) although recent improvements have been shown. ODEQ has listed (303(d) 1998) all of or part of the watershed for temperature, bacteria, sedimentation, habitat modification, and flow modification. Water pollution allocations (temperature, bacteria, and sedimentation TMDLs) have been developed to protect salmonid fish, recreation users, and shellfish. Since the proposed action is a thinning in a rain dominated watershed it and there would no net increase in roads, it would not result in a measurable increase in base or peak flows over the existing condition; it also would not have any affect on chemical or nutrient contamination. The primary water quality concerns associated with these projects are temperature, sedimentation, and channel morphology (habitat modification). A narrative statement is used to describe these potential affects to water quality.<br><br>Project 1- Project activities (timber harvest, road construction and decommissioning, and timber haul) would result in soil disturbance and could increase turbidity and sedimentation levels in local streams. increase stream temperatures. Timber harvest could decrease the level of future coarse woody debris in Riparian Reserves and stream channels and alter channel morphology.<br><br>Project 2 - Project activities (falling trees onto the ground and into stream channels) is not expected to increase water temperature. At the site/local scale, it would result in small amount of sediment inputs and localized stream bank material to be displaced. In the long-term, the project would improve water quality by increasing the amount of LWD, sediment storage capacity, and pool quality in local streams.<br><br>Project 3 - Project activities (falling and removing roadside trees along haul routes) are not expected to alter the current condition of the aquatic system either by affecting its in-stream flows, physical integrity, water temperature, or sediment regime. |

**Table 1. Critical Elements of the Environment.** This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| **Critical Element of the Human Environment** | **Status**<br>**1/ Not Present**<br>**2/ Not Affected**<br>**3/ Affected** | **Interdisciplinary Team Remarks**<br>**1/ If not affected, why not?**<br>**2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm** |
|---|---|---|
| Downstream Beneficial Uses other than Fisheries. (See sections entitled "Fish Species with Bureau Status and Essential Fish Habitat" and "Threatened or Endangered Fish Species or Habitat") | Projects 1, 2 & 3: Not Affected | The primary beneficial uses of surface water in the project area are anadromous fish passage, salmonid fish spawning and rearing, resident fish and aquatic life, and recreation. There are no known municipal, domestic or irrigation water uses within 10 miles of the project area.<br><br>Projects 1, 2 and 3 – Project actions are not expected to have an effect on beneficial uses (OAR Chapter 340, Division 41, Section 202) due to incorporation of BMPs and design features; and the distance of the use downstream from the project area. |
| Key Watershed | Project 1: Affected<br><br>Project 2: Affected<br><br>Project 3: Not Affected | Project 1 – The project would have an impact on the Upper Nestucca Key Watershed. In accordance with the management direction in the Salem RMP, the project and connected actions would result in a net decrease in existing road mileage within the Upper Nestucca Key Watershed. Mileage within the watershed would increase slightly (approximately 1.4 miles) during project implementation but would remain below the baseline of 582 miles due to earlier road decommissioning. At the completion of the project, road decommissioning would result in net decrease of 3.9 miles, approximately 0.7 percent decrease from the baseline.<br><br>Project 2 – The project would contribute to the restoration of high quality habitat through the addition of Large Wood Debris, a primary constituent element of this important fish habitat. There would be no impact on the existing road mileage.<br><br>Project 3 - The project would have no impact on the Upper Nestucca Key Watershed - quality or function. |
| Wetlands (Executive Order 11990) | Project 1: Not Affected<br><br>Project 2: Not Affected<br><br>Project 3: Not Present | Project 1 - There are wetlands in the project planning area but they are small (less than one acre) and not extensive. All wetland areas would be avoided, excluded, or otherwise protected in accordance with guidelines disclosed on page 10 of the RMP.<br><br>Project 2 - There are a few, small wetlands in the project planning area. Project actions may result in a small number of trees being felled into selected wetlands; this action would not result in any adverse impacts to wetlands.<br><br>Project 3 - There are no known wetlands in the project planning area. |
| Wild and Scenic Rivers | Not Present | There are no federally designated Wild and Scenic Rivers within any of the three project areas. The Nestucca River is a State Scenic Waterway. Preference would be to preserve the existing characteristic of the landscape within site distance from the river center. The project, by design, would meet State Scenic Waterway guidelines. |
| Wilderness | Not Present | |

**Table 1. Critical Elements of the Environment.** This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| **Critical Element of the Human Environment** | **Status**<br>**1/ Not Present**<br>**2/ Not Affected**<br>**3/ Affected** | **Interdisciplinary Team Remarks**<br>**1/ If not affected, why not?**<br>**2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm** |
|---|---|---|
| Invasive, Nonnative Species (Executive Order 13112) | Project 1: Affected<br><br>Project 2: Not Affected<br><br>Project 3: Affected | Project 1 - Vascular plant surveys indicated existing populations of priority III noxious weeds within the project area. The proposed action would result in soil disturbance which provides an opportunity for the introduction of noxious weeds and/or invasive non-native plant species. The unit of measure is a narrative. Project design features to reduce the potential for introduction include power-washing equipment, seeding/planting of disturbed areas.<br><br>Project 2 – Project design features such as girdling or felling of individual trees would not result in the type or amount of disturbance that would allow for an increase in populations of invasive, non-native species. Because these activities would occur within established native plant associations, existing competition from native populations would mitigate the establishment of any invasive, non-native species.<br><br>Project 3 - The removal of hardwoods along the roadside would promote suitable habitat for invasive non-native plant species introduction. Because of minor soil disturbance, increased light source, and available seed source, it would be expected that invasive species would increase within the project area. |
| Environmental Justice (Executive Order 12898) | Not Affected | The three proposed actions are not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. |
| | | |

**Table 2. Other Elements of the Environment.** This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| Other Elements of the Environment | Status 1/ Not Present 2/ Not Affected 3/ Affected | Other Elements of the Environment |
|---|---|---|
| Land Uses (right-of-ways, permits, etc) | Not Present | There are no known land uses that would be affected by the density management thinning, fish and wildlife habitat enhancement or haul route maintenance projects. |
| Mineral Resources | Not Affected | There currently are no mineral leases within the three proposed project areas that would be affected and at the completion of the proposed projects the areas would maintain their current suitability for mineral development opportunities. |
| Energy Resources | Not Affected | There currently are no energy developments within the three proposed project areas that would be affected and at the completion of the proposed projects the areas would maintain their current suitability for energy development opportunities. The proposed actions would have no effect on energy development, production, supply and/or distribution. |

**Table 2. Other Elements of the Environment.** This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| Other Elements of the Environment | Status 1/ Not Present 2/ Not Affected 3/ Affected | Other Elements of the Environment |
|---|---|---|
| Fire Hazard | Not Affected | Project 1 – Within the proposed Density Management Thinning the fuel load as measured in tons per/acre would increase to a minor degree in the 1 hour, 10 hour, and 100 hour (fine) fuels classifications immediately after treatment but would quickly return to pre-treatment levels (in less than 5 years) in all Density Management Thinning units. Design features require accumulations of slash in landing areas, along roads, private property lines, and young plantations in the treatment areas to be assessed following treatment. Depending on the size of the landings or the accumulation of slash in these other potential high fire risk areas, burning, or slash pullback may be conducted to reduce the accumulation of slash. With the small increase in fuel loading across most of the treatment areas, and the fuel reduction projects designed for the high fire risk areas it would not be expected that an increase in fire hazard would affect the environment on the project level scale, and the change would not be measurable on the watershed scale. There would be no difference in fire hazard resulting from any of the three action alternatives.<br><br>Project 2 - The Fish and Wildlife Habitat Enhancement Project would slightly increase the amount of slash within the treatment areas, as measured in tons per/acre with the addition of large down logs and the creation of snags, which over time would fall out of the canopy. The small addition of large wood (1000 hour fuels) would not change the overall fuel loading to a point where it would increase the potential fire hazard<br><br>Project 3 – Within the Roadside Hardwood Removal for Road Maintenance Project the fuel load as measured in tons per/acre would increase to a minor degree in the 1 hour, 10 hour, and 100 hour (fine) fuels classifications immediately after treatment but would quickly return to pre-treatment levels (in less than 5 years) in all roadside treatment areas. Design features require accumulations of slash less than 6 inches in diameter to be pulled back at least 25 horizontal feet from the edge of the road bed. All slash greater than 6 inches diameter would be removed from the road prism, and the resulting depth of slash would not exceed 3 feet. To achieve this, scattering and/or bucking may be required. With the implementation of the design features, the small increase in fuel loading across the treatment areas would not be expected to increase fire hazard or affect the environment on the project level scale, and the change would not be measurable on the watershed scale. |
| Rural Interface Areas | Not Present | |

**Table 2. Other Elements of the Environment.** This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| Other Elements of the Environment | Status 1/ Not Present 2/ Not Affected 3/ Affected | Other Elements of the Environment |
|---|---|---|
| Soils (productivity, erodibility, mass wasting, etc.) | Project 1: Affected | Project 1 - Project activities (timber harvest and road construction) would disturb soils (compaction, displacement, surface organic matter loss) which could lead to a loss in soil productivity and increase soil erosion. The unit of measure is a narrative description of disturbance and productivity. |
| | Project 2: Not Affected | Project 2 – Project activities (falling trees onto the ground and into stream channels) would result in minimal, light soil disturbance and no moderate or severe disturbance. A small amount of organic matter added to the forest floor would have a slight beneficial affect on soil productivity at the site scale and immeasurable effect at the project level and watershed scale. |
| | Project 3: Affected | Project 3 - Project activities (falling and removing roadside trees along haul routes) would result in a small amount of soil disturbance. Most of the soil disturbance would occur within road right-a-ways in cuts and fills where forest productivity is generally not a consideration. This action could result in minor increase in soil erosion in the short-term, and a long-term decrease in erosion. The unit of measure is a narrative description of erosion. |

**Table 2. Other Elements of the Environment.** This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| Other Elements of the Environment | Status 1/ Not Present 2/ Not Affected 3/ Affected | Other Elements of the Environment |
|---|---|---|
| Visual Resources | Project 1: Affected<br><br>Project 2: Not Affected<br><br>Project 3: Not Affected | Project 1 - Most of the Density Management project area is located in VRM Class IV which allows for major modifications of the existing character of the landscape. A portion of the haul routes would pass through VRM Classes I and III, however the act of driving through the area would not change the visual values and therefore would have no affect upon Visual Resources. The Davidson rock pit along the Nestucca Access Road is located in VRM Class I. If the rock pit is used as a helicopter landing site during operations, measures would be taken to maintain/restore visual qualities preserving the character of the landscape although there would be a potential for short-term impacts to visual resources at the rock pit site.<br><br>Project 2 – Most of the Fish and Wildlife habitat Enhancement project areas is located in VRM Class IV which allows for major modifications of the existing character of the landscape. A portion of the project area near the Nestucca River would be in VRM Classes I. The proposed project would not alter the existing character of the landscape; therefore would have no affect on visual resources.<br><br>Project 3 – Most of the Hardwood removal project areas is located in VRM Class IV which allows for major modifications of the existing character of the landscape. A small portion of the project's identified road segments, primarily where they intersect with the Nestucca Access road or Bald Mountain Road are located in VRM Classes I and III. Those areas within VRM Class III, which allows for modifications to the existing landscape while partially retaining the existing character, would not be affected. Those areas that fall within VRM Class I would be designed so as not to alter the existing character of the landscape; therefore would have no affect on visual resources. |

**Table 2. Other Elements of the Environment.** This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| Other Elements of the Environment | Status 1/ Not Present 2/ Not Affected 3/ Affected | Other Elements of the Environment |
|---|---|---|
| Special Status and SEIS Special Attention Plant Species and Habitat | Project 1: Not Present | Project 1 - Contracts for Botanical surveys for Lichens, bryophytes, and vascular plants were completed in August 2004. In addition, surveys for *Bridgeoporus nobilissimus* (S&M fungi) were performed by BLM, Tillamook Resource Area, qualified Botanist. Special status plant species surveyed for included: Species listed under the BLM Manual 6840 categories, Survey & Manage Species included in Survey and Manage Standards and Guidelines and Category Assignments (Jan 2001). No listed species were found. |
| | Project 2: Not Affected | Project 2 – Botanical surveys for Lichens, bryophytes, and vascular plants were completed in July 2005. Special status plant species surveyed for included: Species listed under the BLM Manual 6840 categories, Survey & Manage Species included in Survey and Manage Standards and Guidelines and Category Assignments (Jan 2001). Approximately five Douglas fir trees within the Fish and Wildlife Habitat Enhancement unit within 3S 7W Sect. 26 & 36 have been identified as harboring *Hypogymnia duplicata*, an uncommon lichen within this portion of the coast range; it is currently identified as a Bureau Tracking species under the BLM 6840 Special Status Species Policy and also as a Survey and Manage Category C lichen. Project design features ensure that the management recommendations are met for this species and that the lichen species and associated habitat will not be affected. |
| | Project 3: Not Present | Project 3 – This project is located within the road prism where ground disturbance has occurred and is common. Because of the lack of suitable habitat no botanical clearance surveys are required. No Special Status Plant Species are expected to occur within the project boundaries. |

**Table 2. Other Elements of the Environment.** This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| Other Elements of the Environment | Status 1/ Not Present 2/ Not Affected 3/ Affected | Other Elements of the Environment |
|---|---|---|
| Bureau Special Status and SEIS Special Attention Wildlife Species and Habitat | Project 1: Affected<br><br>Project 2: Affected<br><br>Project 3: Not Affected | The unit of measure for evaluating the level of effects to a species is a narrative discussion.<br><br>Project 1 - The Density Management treatment units are potential habitat for the northern goshawk although there is a very low likelihood that they exist in project area - range and habitat indicate possibility. In the long term the proposed action would improve habitat conditions, while in the short term the potential for disturbance would be the greatest, although an unlikely, adverse effect. Columbia torrent salamanders are likely to exist near the project areas; no-harvest riparian buffers would be expected to protect habitat for torrent salamanders except where approximately 20 yarding corridors are cut through, where a small amount of disturbance to habitat may occur that may affect individuals. There is potential for impacts to nesting Harlequin ducks through habitat modification and potential for disturbance. Design features that would benefit long-term development of late-seral habitat would benefit several species of bats.<br><br>Required surveys for SEIS Special Attention Species (Survey and Manage) were completed to protocol; two S&M mollusk species were surveyed for; neither was found. Five additional Special Status mollusk species were surveyed for; two species were found to be present (Tillamook westernslug and Crowned tightcoil) – potential for impacts to mollusk habitat. Protocol surveys for red tree voles were conducted in all units that triggered the need for surveys; no active nests were located within the Density Management Treatment units. It is likely that the Density Management project will degrade in the short-term some of the red tree vole habitat in some of the treated stands resulting in long-term benefits to the development of higher quality habitat.<br><br>Project 2 - There is potential for impacts to nesting Harlequin ducks through minor potential for disturbance and negligible habitat modification. Potential for minor short and long-term benefits to bats through design features that would promote snags, small gaps in canopy. |

**Table 2. Other Elements of the Environment.** This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| Other Elements of the Environment | Status 1/ Not Present 2/ Not Affected 3/ Affected | Other Elements of the Environment |
|---|---|---|
| Fish Species with Bureau Status and Essential Fish Habitat | Project 1: Affected<br><br>Project 2: Affected<br><br>Project 3: Not Affected | Project 1, This project has the potential to affect Pacific lamprey, cutthroat trout, steelhead and Essential Fish Habitat for coho and chinook salmon by harvest and hauling activities that could introduce sediment into streams near harvest units or haul routes and the reduction in CWD recruitment potential from thinned Riparian Reserves outside of no-harvest buffers. The unit of measure to describe these potential effects is a narrative that describes impacts to habitat, individuals or a population and a discussion of whether actions would contribute to the need to list under the ESA. Examples of design features to reduce the amount or timing of sediment inputs include dry season harvest and haul for much of the project, spot rocking and use of sediment traps where necessary. For the proposed helicopter landing adjacent to the Nestucca River a sediment control plan would be developed and implemented.<br><br>Project 2, The Fish and Wildlife habitat enhancement project has potential of affecting cutthroat directly with similar potential affects to the rest of the fish assemblage with the exception of chinook salmon. Implementation during ODFW's instream work window would minimize potential impacts to all fish species and eliminate potential impacts to chinook salmon. The project would contribute to the restoration of high quality habitat through the addition of Large Wood Debris, a primary constituent element of fish habitat. The unit of measure to describe these potential effects is a narrative that describes impacts to habitat, individuals or a population and a discussion of whether actions would contribute to the need to list under the ESA.<br><br>Project 3, The maintenance of haul routes by removing roadside trees is anticipated to reduce the future potential of sediment inputs resulting from road maintenance and trees pulling loose from road cut slopes. No impacts to MSA or SSS are anticipated with the implementation of this action. |

**Table 2. Other Elements of the Environment.** This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

| Other Elements of the Environment | Status 1/ Not Present 2/ Not Affected 3/ Affected | Other Elements of the Environment |
|---|---|---|
| Forest Vegetation Associated with Late-Successional Reserves and Riparian Reserves | Project 1: Affected<br><br>Project 2: Affected<br><br>Project 3: Affected | Project 1 - Implementation of the proposed density management thinning is expected to accelerate the development of numerous late-successional forest structural features and increase stand resistance to the impacts of Swiss needle cast disease on Douglas-fir. The general growth rates and vigor of retained tress would be increased as would the diversity of the stands structure and species mix. Patch openings of up to an acre in size would allow establishment of shrubs and young trees and promote crown development and retention in overstory trees. Openings are expected to close relatively quickly.<br><br>Potential adverse impacts of the project have also been identified; these include the natural recruitment of relatively smaller-sized snags within the thinning units being largely curtailed for at least 20 years after thinning. Design features that would help minimize adverse impacts, include the creation of snags and down logs to help offset the adverse impacts to CWD habitat, the retention of unthinned buffers and leave islands, and maintaining greater canopy cover in some thinned portions of the Riparian Reserves as well as numerous additional features contained within the silvicultural prescription including the retention of trees with defect and other characteristics desirable to wildlife.<br><br>Project 2 - Implementation of the proposed fish and wildlife habitat enhancement project is expected to accelerate the development of some late-successional forest structural features and enhance some of the ecological functions of treated Riparian Reserves.<br><br>Project 3 - The anticipated effects of the proposed cutting of selected 15- to 30-year-old hardwood trees along designated roads would be some short-term small openings where individual trees were removed. These small openings are expected to close relatively quickly.<br><br>The unit of measure for all three projects is a narrative and acres treated. |
| | | |

# APPENDIX 3

## LIST OF PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS WHICH MAY BE CONSIDERED IN THE CUMULATIVE EFFECTS ANALYSIS OF THE HOAG PASS PROJECTS

**List of Other Actions –** This list contains a number of identified ongoing and/or past, present or reasonably foreseeable future projects, activities or programs of work; it serves as a source or pool of activities that various specialists may have considered while conducting cumulative effects analysis for the Hoag Pass Projects. Depending upon the resource and/or temporal or spatial scale of the analysis, projects to be considered include those projects which may continue to impact or are expected to impact the same resource at the same time and place as the proposed action, and/or have contributed to the current condition in a manner that still has impacts upon the same resources.

- The Tillamook Resource Area recently completed Activity Planning within three APUs (Activity Planning Units) located within the Nestucca Watershed. These include the Hoag Pass, Ginger-Cedar and Moon Creek APUs. These planning processes identified 15, 14 and 15 potential projects respectively which the decision-maker could select for development (Hoag Pass Activity Planning Report dated February 2, 2004, Ginger-Cedar Activity Planning Report dated April 7, 2005 and the Moon Creek Activity Planning Report dated July 8, 2005). Current Resource Area plans include beginning an activity planning effort within the Walker Creek APU during the 2006 Fiscal Year that will likely result in the identification of various management opportunities which could be selected for development and eventual implementation.
- There are several BLM commercial density management projects recently completed (since 1994), currently active or in various stages of the planning process which are located within and/or near the Nestucca Watershed. These projects all have similar objects to promote late-seral habitat and include the following: Muletail (EA# OR-086-95-13); Rye Mountain (EA# OR-086-95-12); Phoenix (EA# OR-086-95-19); Willy's Elk (EA# OR-086-98-05); ReBear (EA# OR-086-03-01); Baker Creek I (EA# OR-086-03-02); Southern Flame I and Southern Flame II (EA# OR-086-04-01); and Ginger Snap, Cedar Sunset, Clarence Clearance (to date, not yet developed).

  *As noted above, the Tillamook Resource Area's current plans include beginning an activity planning effort within the Walker Creek APU in the uppermost reaches of the Nestucca Watershed during the 2006 Fiscal Year; this effort will likely result in the identification of density management opportunities which could be selected for development and implemented (sold) as soon as FY2010.*
- Nestucca Comprehensive Restoration Strategy (The Activity Planning Processes noted above are considered to be a part of the Nestucca Comprehensive Restoration Strategy which is currently on-going as well as still under development.)
- Continued implementation of the Upper Nestucca Restoration and Enhancement Project (EA# OR-086-00-02). Fish habitat enhancement in the main stem of the Nestucca was recently completed (summer of 2003). There is likely a need to do some maintenance on some of the existing fish structures; the existing EA which is good until 2006 would cover this type of work.
- Replacement of the Ginger Creek Culvert on the Nestucca Access Road (EA# OR-086-00-02). This work is expected to be completed after FY 2006.
- Coastal Road Stabilization and Watershed Restoration and Storm-Damage Road Repair Projects (EA# OR-086-00-04). To date there has been a completion of 6.0 miles of road full decommissioning and 36.3 miles of road closing (non-drivable).
- Culvert removal or replacement for fish passage (EA# OR-086-03-04)
- Young Stand Management. This includes both variable spaced and more routine PCT (pre-commercial

thinning) as well as other minor vegetation management projects such as white pine pruning (OR-086-04-04 CX).

- Campground operations and maintenance.
- An occasional discretionary O&C Road Use Permit or Recreation Special Event Permit.
- Road use via a non-discretionary right-of-way agreement with Weyerhaeuser on Cedar Creek Road and the lower end of Ginger Creek Road. This includes an active program of roadside hazard tree felling.
- Road maintenance (OR-086-02-01 DNA).
- Maintenance and operation of the Upper Nestucca OHV trail system. This includes up to two OHV Special Events per year (EA# OR-086-97-05).
- Issuance of Special Forest Products permits in compliance with the Special Forest Products program (CX # OR-086-02-02).
- Nestucca Watershed Roadside Inventory of Priority I, II and III Noxious Weeds (BLM Roads).
- Nestucca River Access Road Traffic Study (Completed October 18, 2005).
- Meadow Lake Dam Failure – 1962.
- Extensive stream wood cleaning – 1960s and 1970s.
- Construction of McGuire Dam and Reservoir on the Nestucca River – 1968.
- The water storage capacity of the McGuire Reservoir expanded in 2003-04.
- McMinnville Water and Light Department is currently planning a project to divert a portion of winter flows in Walker Creek to McGuire and/or Haskins Reservoirs.
- There are several Oregon Department of Forestry and industrial timber harvests and associated activities recently completed, currently underway or soon to be occurring within and/or near the upper Nestucca River watershed. In December 2005, ODF sold a partial cut sale referred to as Tucca Head located at T3S., R7W., sections 3 and 10, and they are currently planning a FY2008 sale, primarily thinning, called South Ginger at T3S., R7W., sections 12. Active timber harvest by Green Diamond in the Moon Creek Watershed, came to BLM attention when a ROW was requested allowing for Tailholds.
- There are a total of 23 timber sales scheduled to sold in the entire Tillamook District of the Oregon Department of Forestry in 2007.
- Historic BLM forest management practices in the area have had results which are still being realized today. Thousands of acres of mid-seral stands were commercially thinned in the late 1960s and the 1970s. Most of this thinning was light and uniform; most of the snags or green trees with defect which were present at the time of the thinnings within or near the thinning units were felled or harvested. Clearcut harvesting fragmented much of the existing mature forest habitat and reduced patch sizes.
- BLM implemented Wildlife Habitat Enhancement Projects within 1271 acres of mature conifer-dominated stands located within the "Nestucca Block" LSR between May 1995 and January 2003. These projects primarily involved snag creation through girdling green trees within the live crown or at the base.

# APPENDIX 4

# LITERATURE CITED AND/OR SELECTED REFERENCES


Adams, P. W., and J. Ringer. 1994. *The effects of timber harvest & forest roads on water quantity & quality in the Pacific Northwest: summary & annotated bibliography.* Oregon State University, Forest Engineering Department, Corvallis, OR. 147 pp.

Aresa, A., et.al. 2005. Ground-Based Forest Harvesting Effects on Soil Physical Properties and Douglas-Fir Growth. Soil Sci Soc Am J 69:1822-1832

Beschta, R.L. et al. 1995. *Cumulative Effects of Forestry Practices in Oregon: Executive Summary*. Oregon State University.

Beschta, R.L., and J. R. Boyle. 1995. *Cumulative Effects of Forestry Practices in Oregon: Literature and Synthesis*. Oregon State University, Corvallis, Oregon.

Bunte, K., and L.H. MacDonald, 1999. *Scale considerations and the detectability of sedimentary cumulative watershed effects. Technical Bulletin No. 776.* National Council for Air and Stream Improvement, Research Triangle Park, NC. 327 pp.

Carey, A.B. 1991. *The Biology of Arboreal Rodents in Douglas-fir Forests.* Gen. Tech. Rep. PNW-276. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station:9-12.

Chambers, C.L., T. Carrigan, T.E. Sabin, J. Tappeiner, and W.C. McComb. 1997. *Use of artificially created Douglas-fir snags by cavity-nesting birds*. West. J. Appl. For. 12(3):93-97.

Corn, P.S. and R.B. Bury. 1991. *Terrestrial Amphibian Communities in the Oregon Coast Range. In: Wildlife and Vegetation of Unmapped Douglas-fir forests.* Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. Gen. Tech. Rep. PNW-285.

Duncan, S.H., R.E. Bilby, J.W. Ward, and J.T. Heffner. 1987. *Transport of Road-Surface Sediment through Ephemeral Stream Channels.* Water Resources Bulletin Vol 23. No. 1: 113-119.

Forsman, E.D., I. Otto, and A.B. Carey. 1991. *Diets of Spotted Owls on Olympic Peninsula, Washington and the Roseburg District, Bureau of Land Management*. Page 527 *in* L.R. Ruggiero, K.B. Aubry, A.B. Carey, and M.H. Huff, Tech. Coors. *Wildlife and Vegetation of Unmapped Douglas-fir Forests.* Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. Gen. Tech. Rep. PNW-285.

Hann, D.W., D.D. Marshall, and C Aylworth. 2003. *ORegon Growth ANalysis and projectiON system (ORGANON).* SMC Version, Edition 7.0. College of Forestry, Department of Forest Resources, Oregon State University, Corvallis.

Heninger, Scott, Miller, Anderson, and Duke. 2002. *Soil Disturbance and 10-year growth response of coast Douglas-fir on nontilled and tilled skid trails in the Oregon Cascades.* Can. J. For. Res. 32:233-246.

Hostetler, B.B., and D.W. Roass. 1996. *Generation of coarse woody debris and guidelines for reducing the risk of adverse impacts by Douglas-fir beetle.* Unpublished paper, USDA Forest Service Westside Forest Insect and Disease Technical Center, Troutdale, OR 6p.

Jasper, C.D., 2000?. *The Effects of Four Properties on Timber Productivity.* Draft. Unpublished. Tillamook NRCS

McCain, C., and Diaz, N. 2001. *Field guide to the forested plant associations of the Northern Oregon Coast Range.* USDA Forest Service, Pacific Northwest Region R6-NR-ECOL-TP-02-02.

Meurisse,1998. Proceedings: Pacific Northwest forest and rangeland soil organism symposium; 1998 March 17-19; Corvallis, OR.

Meurisse, 1999. *Soil Quality and Health-Some Applications to Ecosystem Health and Sustainability*. Proceedings: Pacific Northwest Forest Rangeland Soil Organism Symposium. PNW-GTR-361.

Miller and Anderson. 2002. *Soil Compaction: Concepts, Claims, and Evidence*. Small Diameter Timber Management and Markets proceeding from conference held February 25-27-2002.

Miller, Scott, and Hazard. 1996. *Soil Compaction and Conifer Growth after Tractor Yarding at Three Coastal Washington Locations.* Can. J. For. Res. 26:225-236.

Oregon Department of Environmental Quality. April 2002. Draft Nestucca Bay Watershed Total Maximum Daily Load (TMDL).
http://www.deq.state.or.us/WQ?TMDLs/NorthCoastBasin.htm#NCS

Oregon Department of Environmental Quality (DEQ) Laboratory Division. February 2004. Water Quality Report: Ambient Monitoring Stations in the Oregon Coast Coho Evolutionarily Significant Unit.
www.oregondeq.com/lab/wqm/Oregon%20Plan_04_ver3.pdf

Oregon Department of Environmental Quality. May 2005. *Oregon Water Quality Index Summary Report*. Water Years 1995-2004
http://www.deq.state.or.us/lab/wqm/OWQI%20Summary04.pdf

Oregon Department of Fish and Wildlife (ODFW), Aquatic Inventory Project. 1997 and 2000. Unpublished data and comment summaries from Physical Habitat Surveys in the Nestucca River Basin.

Oregon Watershed Assessment of Aquatic Resources Manual (OWARM), Component IV Hydrology and Water Use. http://www.oregon.gov/OWEB/docs/pubs/wa_manual99/04_hydro_water_print.pdf

Tillamook County, Progressive Soil Survey, 2005, Unpublished. USDA Natural Resources Conservation Service.

U.S. Bureau of Land Management. 2005. *Sedimentation and Bed Stability in the Upper Nestucca Watershed: Results from 2004-2005 Monitoring of BLM land in the Upper Nestucca Watershed using Relative Bed Stability (RBS) Method*. Mico, Lindsay. Unpublished.

USDA and USDI. September 2000. *Management Recommendations for the Oregon red tree vole (Arborimus longicaudus*) version 2.0. 25 pages.

USDI – US Fish and Wildlife Service. 1992. *Endangered and threatened wildlife and plants; determination of critical habitat for the northern spotted owl; final rule.* 50 CFR Part 17. Federal Register, January 15, 1992.

USDI – US Fish and Wildlife Service. 1996. *Endangered and threatened wildlife and plants; determination of critical habitat for the marbled murrelet; final rule.* 50 CFR Part 17. Federal Register, May 24, 1996.

U.S. Forest Service and Bureau of Land Management. 2005. *Northwest Forest Plan Temperature TMDL Implementation Strategies*. Final (September 9, 2005). Portland, Oregon. P.19

Wells, Ray E., et. al., 1995, Geologic map of the Tillamook Highlands, northwest Oregon Coast Range: A digital database: U.S. Geological Survey Open-File Report 95-670. http://pubs.usgs.gov/of/1995/of95-670/